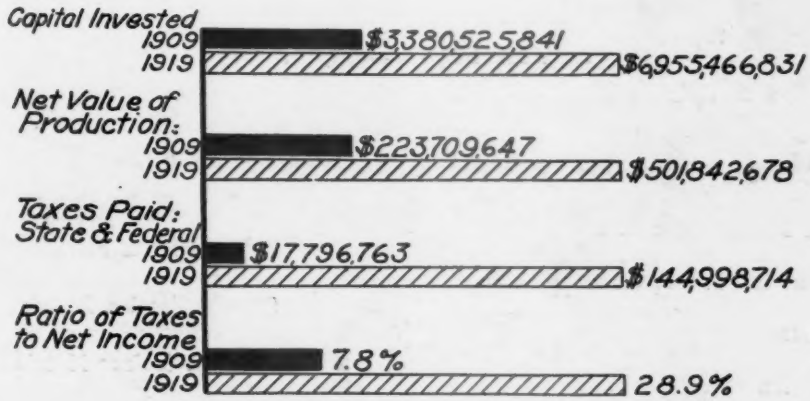
THE MINING CONGRESS JOURNAL

VOLUME 8 NUMBER 3

AN UNWARRANTED BURDEN



Twenty thousand producing mining enterprises are taxed 28.9 per cent. of their net earnings. Mining taxes have increased 710.7 per cent. since 1909. The mining industry is forced to absorb excessive costs imposed by the government by making drastic cuts in expenditures which are vitally necessary to maintain future production and development of mineral resources.

$3.00 Per Year *30c Per Copy*

When in Washington *Let us be of Service*

MEMBERS CONFERENCE ROOM

At Your Disposal—Any or All

The Tax Division
Bureau of Mining Economics
Proper Contact Government Departments
Legal Division
Library
Stenographic Service

OF

Division of Mineral Tariffs
Information Service Division
Standardization Division
Precious & Rare Metals Division
The Mining Congress Journal
Hotel Reservations

The American Mining Congress

Munsey Building *Washington, D. C.*

Admission Fee . . . $15.00
Annual Dues 10.00

Organized, 1898
24 Years of Service

The two-fisted Turbro

A TWO-FISTED miner wants a two-fisted drill for heavy drifting and that's exactly what the Waugh Turbro is.

THE steel rotation and hammer action are independently controlled and operated, so that the speed of one may be greater or less than that of the other according to the drill-runner's will. Just as the two-fisted single-jacker turns his steel with one hand and strikes his blow with the other, so the two-fisted Turbro whirls the steel around with its turbine motor while striking the blow with its separately controlled and powerful hammer.

ASK a two-fisted Turbro operator about stuck steels and he'll tell you there's no such thing.

FREEDOM from the stuck steel nuisance is only one of many reasons why the Turbro always turns the trick in heavy drifting. Drop us a line for a Turbro bulletin.

THE Denver Rock Drill Manufacturing Co.

Denver, Colorado

San Francisco, Scranton, El Paso — Los Angeles, Seattle, Duluth — Joplin, Wallace, Salt Lake City — Lima, Santiago, Butte — New York, Houghton, Birmingham — Melbourne, Johannesburg, Mexico City

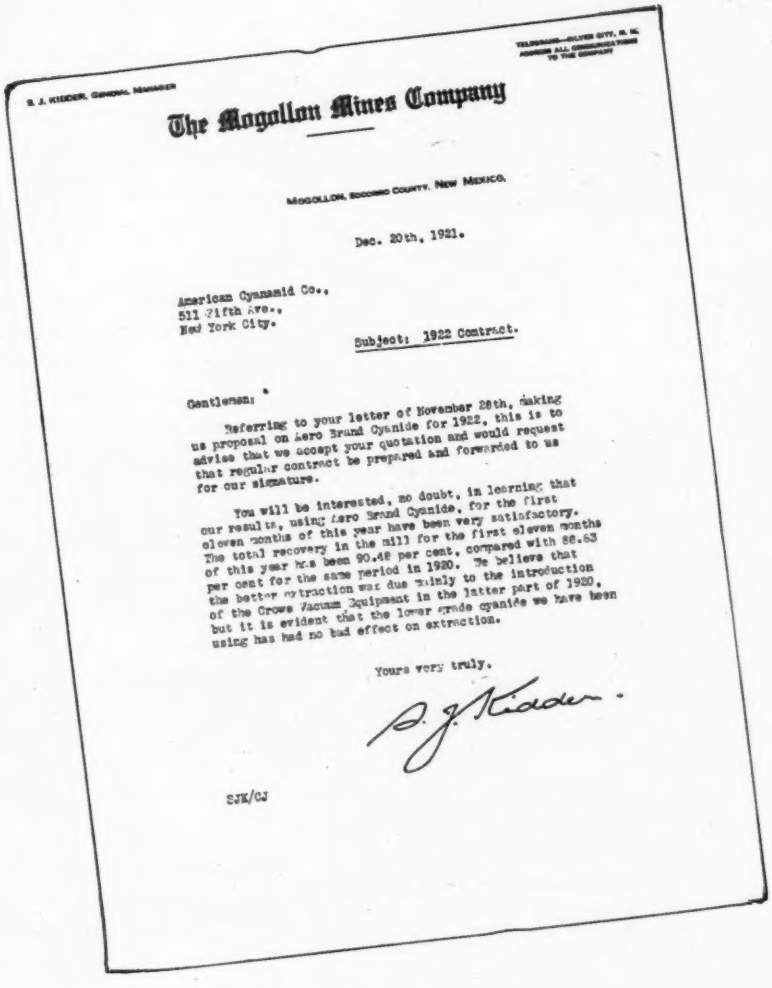
Canadian Rock Drill Company, Limited

Sole Agents in Canada

Toronto, Ont. — Cobalt, Ont. — Nelson, B. C. — Vancouver, B. C.

K-28

AERO BRAND CYANIDE



The Mogollon Mines Company

MOGOLLON, SOCORRO COUNTY, NEW MEXICO.

Dec. 20th, 1921.

American Cyanamid Co.,
511 Fifth Ave.,
New York City.

Subject: 1922 Contract.

Gentlemen:

Referring to your letter of November 28th, making us proposal on Aero Brand Cyanide for 1922, this is to advise that we accept your quotation and would request that regular contract be prepared and forwarded to us for our signature.

You will be interested, no doubt, in learning that our results, using Aero Brand Cyanide, for the first eleven months of this year have been very satisfactory. The total recovery in the mill for the first eleven months of this year has been 90.48 per cent, compared with 88.63 per cent for the same period in 1920. We believe that the better extraction was due mainly to the introduction of the Crowe Vacuum Equipment in the latter part of 1920, but it is evident that the lower grade cyanide we have been using has had no bad effect on extraction.

Yours very truly.

S. J. Kieden.

SJK/CJ

AMERICAN CYANAMID COMPANY
511 Fifth Ave. New York

THE MINING CONGRESS JOURNAL

MARCH 1922

CONTENTS

Illustrations

	Page
H. A. Volstead	627
E. B. Denison	627
Wm. B. Daly	631
F. McN. Hamilton	641
Robert M. Betts	642
John M. Whitehead	643
Lee Long	644
Henry M. Temple	647
Philip Pitt Campbell	651
Herbert Hoover	655

Editorials

Trade Information	623
Labor as a Commodity	623
Labor Politicians or Labor Statesmen	624
Faith and Foresight	624
The Mingo Disturbances	625
Muscle Shoals	625
A Good Trick—If You Can Do It	625
Specialists in New Places	626
A Necessity and a Boon	626
Metal Mining and Deflation	626

Feature Articles

Standardization of Underground Transportation in Metal Mines, by Wm. B. Daly	631
Mineral Tariffs and Mining Men, by Herbert Wilson Smith	635
Corrective Action by Government Needed to Aid Mining Industry, by McK. W. Kriegh	638
Character Study of Representative Philip Pitt Campbell, by Ira L. Smith	651

News

Federal Blue Sky Legislation Revived	627
Finley Report Holds Undeveloped Resources of No Appraisal Value	629
Standardization Bulletin Now Available	629
Legal Status of Trade Associations Defined	630
Water Power Development One-Third of Potential Figure	630
Soft Coal Reserve of 55,000,000 Tons on April 1 is Forecast	633
Kansas Coal Miners Before Supreme Court	634
World's Coal Production Shows Heavy Decrease	634
Ceramic Work Will Feel Cut in Funds	636
U. S. Oil Production Sets New Record	636
Quality and Quantity of Alaska's Coal Soon to be Known Definitely	637
New Tax Committee Members	640
Improved Zinc Recovery is Sought	640
Representative Manufacturers Form Mining Congress Division	645
Board Favors Gold Standard	646
Oil Shale Industry Review	646
New Oil Regulation	646
Proposed Mapping Program Would Benefit Mining Industry	647
Local Safety Chapters Soon to be Organized	648
Navy Coal Prices Subject of Decision	648
Coal Storage Data	648
Interior Department Appropriations to Feel Effective Economy	649
Coal Mine Accidents Decreased	650
North Dakota Lignite Report	650
Condition of Feldspar Industry Outlined	650
Leased Land Coal Production	650
High Rate Stifled Arizona Mining	652
Reopening of Gold Mines Involves Gas Danger	652
Alaskan "Monopoly" Attacked	652
British Admit Coal Price Cutting	652
Review Sought in Utah Suits	652
Cites High Foreign Drilling Costs	652
Transportation	653
Important Tax Decision	654
Tri-State Chapter Elects Officers	654
New Keystone Catalog	654
Eugene R. Day Succumbs	654
Secretary Hoover's Statement on Transportation	655
Federal Power Permits	657
Attractive Special Edition	657
Government Mining Exhibit	657
Timber Consumption in Mines	657
Industrial Notes	657
National Legislation	658
Patents	662

Published every month by the American Mining Congress, Washington, D. C.

OFFICERS

WILLIAM J. LORING, *President*
DANIEL B. WENTZ, *1st Vice President*
E. L. DOHENY, *2d Vice President*
THOMAS T. BREWSTER, *3d Vice President*
J. F. CALLBREATH, *Secretary*

DIRECTORS

BULKELEY WELLS, *Denver, Colo.*
DANIEL B. WENTZ, *Philadelphia, Pa.*
JOHN C. HOWARD, *Salt Lake City, Utah*
THOMAS T. BREWSTER, *St. Louis, Mo.*
H. W. SEAMAN, *Chicago*
SIDNEY J. JENNINGS, *New York City*
HUGH SHIRKIE, *Terre Haute, Ind.*
ROBERT LINTON, *New York City*
JAMES S. DOUGLAS, *Douglas, Ariz.*
E. L. DOHENY, *Los Angeles, Calif.*
CARL SCHOLZ, *Charleston, W. Va.*
WILLIAM J. LORING, *San Francisco, Cal.*

STAFF

GEORGE H. BAILEY, *Counsel*
H. N. LAWRIE, *Economist*
HERBERT WILSON SMITH, *War Minerals*
E. C. PORTER, *Convention Manager*
McK. W. KRIEGH, *Tax Division*
E. H. PULLMAN, *Information Service*
E. R. COOMBES, *Business Manager, Mining Congress Journal*

Entered as Second Class Matter January 30, 1915, at the Postoffice at Washington, D. C.

The Roessler & Hasslacher Chemical Company

709-717 Sixth Avenue
NEW YORK, N. Y.

Works:
PERTH AMBOY, N. J. NIAGARA FALLS, N. Y. ST. ALBANS, W. VA.

CYANEGG
R&H C Co

Cyanide of Sodium 96-98%

Cyanogen contents 51-52%

"Cyanegg"

or Cyanide of Sodium 96-98% In egg form, each egg weighing approximately one ounce

Another Large User of Goodman Locomotives

Is shown by the above views in the

Largest Underground Iron Mine in the World

The Goodman Metal Mine Locomotive:

FIRST:—Proved its peculiar suitability for tramming service.

SECOND:—Became known throughout the Michigan and Minnesota Iron and Copper country.

THIRD:—Is standard equipment for old users, and is being adopted by others to whom its reputation has spread.

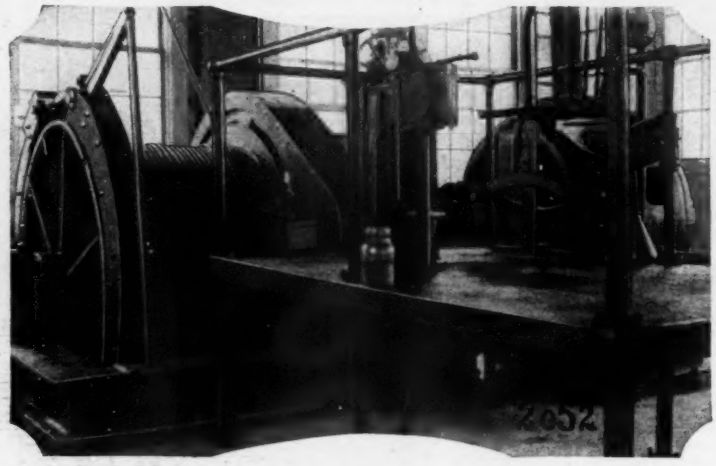
They like the Locomotive.
They like the service which follows it.

(5)

GOODMAN MANUFACTURING COMPANY
48th to 49th Streets on Halsted
CHICAGO, ILL.
PITTSBURGH — BIRMINGHAM
NEW YORK — ST. LOUIS
CINCINNATI — CHARLESTON, W.VA. — SEATTLE — DENVER

LIDGERWOOD MINE HOISTS

Electric built in any size ***Steam up to 1000 H.P.***



WE build mine hoists in types and sizes to meet every requirement of mine service.

ECONOMY IS THE KEYNOTE IN THE CONSTRUCTION OF LIDGERWOOD HOISTS.

The design, material and workmanship are the best obtainable. The result is a smooth running, well balanced hoist, with internal friction reduced to a minimum, giving the greatest rope pull for the power expended.

This is True Economy

Lidgerwood Mfg. Co. 96 Liberty Street, New York

Philadelphia Pittsburgh Chicago Cleveland Detroit Los Angeles Seattle London, England

WIRE

electrical, rope, airplane, piano, pipe-organ, flat wire (strip steel) hoops, bale-ties, tacks, nails, barbed wire, concrete reinforcement, springs, netting, wire fences, steel posts, steel gates, trolley wire and rail bonds, wire wheels, auto-towing cables, horse shoes, round and odd-shape wires, for manufacturing.

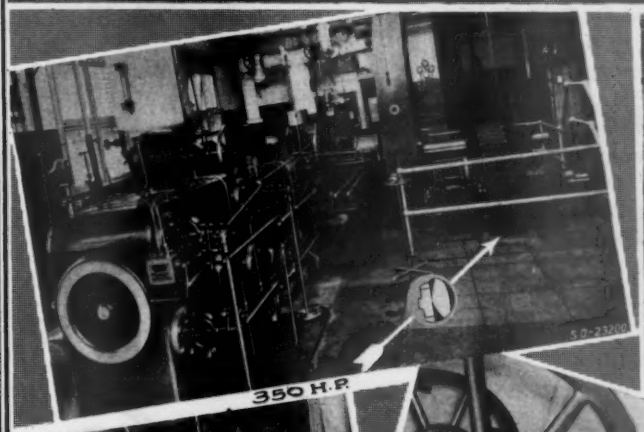
Illustrated books describing uses, free

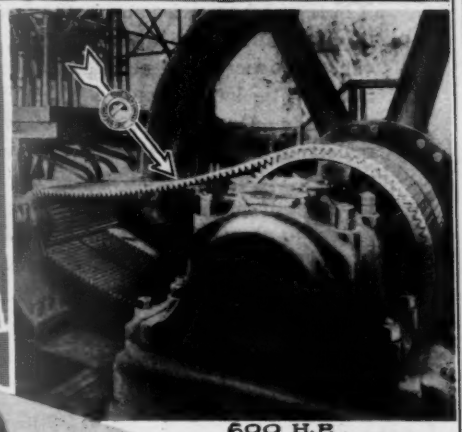
American Steel & Wire Co.

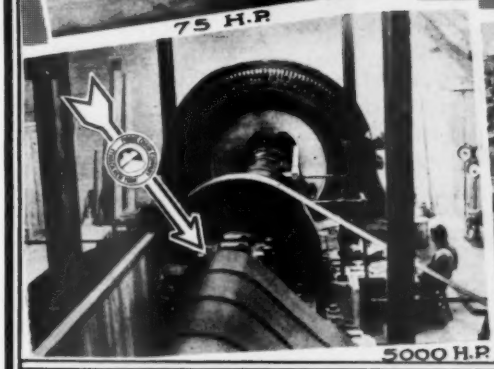
CHICAGO NEW YORK

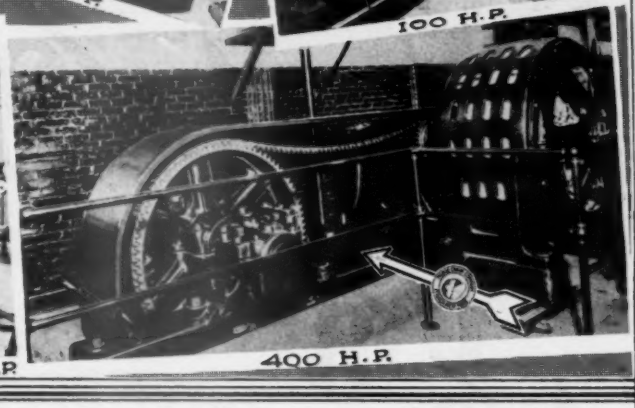
MORSE DRIVES

SILENT CHAIN — THE MORSE ROCKER JOINT









Save Power *Eliminate Transmission Waste* *Insure Profit*

MORSE CHAIN CO., LARGEST MANUFACTURERS OF SILENT CHAINS IN THE WORLD **ITHACA, N.Y.**

Morse Engineering Service BENEFIT BY MORSE SERVICE AS OTHERS DO *Assistance Without Obligation*

Write Today for Booklet *Address Nearest Office*

ATLANTA, GA.
BALTIMORE, MD.
BOSTON, MASS.
CHARLOTTE, N. C.
CHICAGO, ILL.
CLEVELAND, OHIO
DETROIT, MICH.
KANSAS CITY, MO.
SAN FRANCISCO, CAL.
ST. LOUIS, MO.
MINNEAPOLIS, MINN.
MONTREAL
TORONTO
NEW YORK CITY
PHILADELPHIA, PA.
PITTSBURGH, PA.

"MORSE IS THE GUARANTEE ALWAYS BEHIND THE EFFICIENCY, DURABILITY AND SERVICE"

The DU PONT Company announces a new explosive

IN their laboratories and in the field, Du Pont chemical engineers are always striving to make Du Pont explosives more efficient and more economical for your needs. The latest result of their efforts is this new dynamite—Dumorite—an explosive which has approximately the strength of 40% dynamite and is considerably more economical. This particular manifestation of Du Pont Explosives Service will save thousands of dollars to users of explosives everywhere.

1/3 more per dollar

DUMORITE—the new Du Pont dynamite—is a guncotton-nitroglycerin dynamite which

1. Gives over ⅓ more work per dollar
2. Will not cause headache
3. Will not freeze in any temperature

Dumorite has approximately the same strength as regular 40% dynamite. Under ordinary conditions it does the same work, stick for stick.

40% dynamite is packed with 100 1¼ x 8 cartridges to the 50-lb. case. Dumorite has 135 to 140 cartridges to the 50-lb. case. The price is the same per case.

In Dumorite you get over ⅓ more cartridges—over ⅓ more work per dollar. In other words, your dynamite dollar is worth $1.35.

Dumorite is now being used successfully for most types of blasting work. The Du Pont Explosives Service Department is ready to work out the adaptation of this money-saving explosive to your particular operations. We suggest that you write our nearest branch office giving your requirements.

Branch Offices:
Birmingham, Ala.
Boston, Mass.
Buffalo, N. Y.
Chicago, Ill.
Denver, Colo.
Duluth, Minn.
Huntington, W. Va.
Kansas City, Mo.
New York, N. Y.
Pittsburgh, Pa.
Portland, Ore.
St. Louis, Mo.
San Francisco, Calif.
Scranton, Pa.
Seattle, Wash.
Spokane, Wash.
Springfield, Ill.
Du Pont Products Exhibit
Atlantic City, N. J.

E. I. du Pont de Nemours & Co., Inc.
Explosives Department, Sales Division
Wilmington, Delaware

NON-HEADACHE DU PONT NON-FREEZING
DUMORITE

Lubricate Your
MINE CARS
with
Superla Greases

Public approval comes, naturally, to the products of an organization pervaded with a determination to stop at nothing short of perfection.

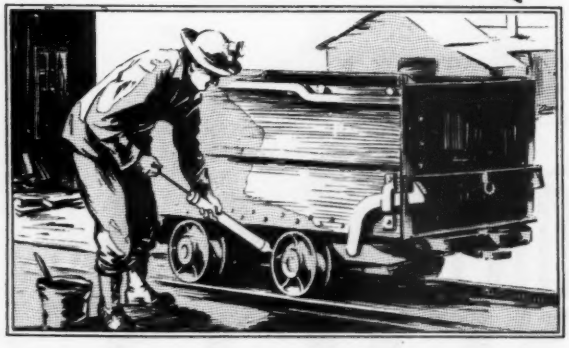
That's why Superla Mine Car Greases have attracted such widespread attention among mine owners and operators.

Superla Mine Car Greases have been especially designed to stand up under the enormous pressure occurring between shaft and wheel. They have the correct fluidity to thoroughly bathe the bearings with a friction reducing film of oil, and reach every point which requires lubrication. Superla Mine Car Greases will not run out of the wheels and waste, as will black oils and cheap fluid lubricants.

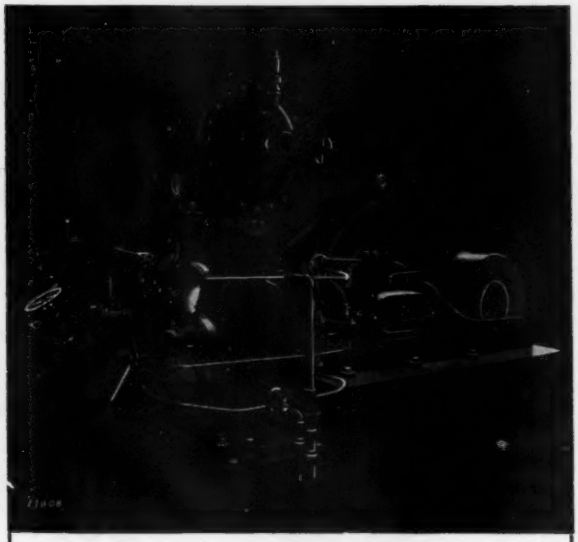
Any user of Superla Mine Car Greases will substantiate these statements, but only by actual usage will you realize fully these and other advantages.

Send for our book, "Mine Car Lubrication," prepared by our engineering department.

It is Free



STANDARD OIL COMPANY
(INDIANA)
CHICAGO ILLINOIS



Direct-Connected Motor Driven Air Compressors

Ingersoll-Rand Class "PRE"

The efficient regulation of the air output by the 5-step Clearance Control is probably the outstanding reason for the success of Class "PRE" direct-connected, electric motor-driven compressors.

Efficient Operation at Full and Partial Loads.

With this regulation the compressor automatically operates at any one of the five load points depending upon the demand for air. The compressor will deliver full, three-quarter, one-half, one-quarter or none of its capacity and the horsepower required is practically in proportion to the air output.

Another feature of the 5-step Clearance Control is the Maximum Demand Stop which prevents the compressor being operated at any higher maximum load than is desired. This is extremely important if a maximum demand or service charge is included in your contract for electric current.

We will be pleased to quote on the compressor direct-connected to unity or leading power factor synchronous motor with exciter and panel.

Bulletin 3126

INGERSOLL-RAND COMPANY
11 Broadway New York

Ingersoll-Rand

607-C

"Hercules" [Red Strand] Wire Rope Increases Working Efficiency

YOU men who operate hoists, haulage systems, excavators, steam shovels, etc., know that when your rope fails your work stops, regardless of the ability of the equipment on which it is used.

The use of Hercules (Red Strand) Wire Rope insures maximum rope service. While it is primarily a dependable rope, the qualities that give it dependability also make it safe and economical.

Hercules Wire Rope has an enviable service record back of it, and its one red-strand is our guarantee that its exceptional quality is constantly maintained.

MADE ONLY BY

A. LESCHEN & SONS ROPE COMPANY

Established 1857

MANUFACTURERS OF

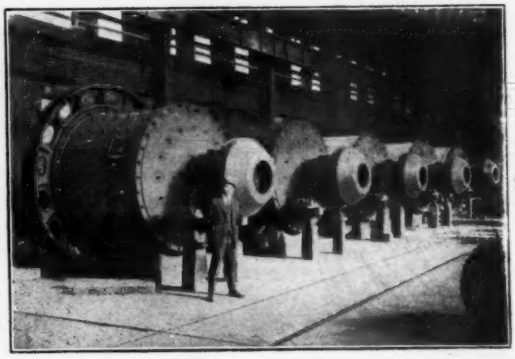
High Grade Wire Rope

AND

Aerial Wire Rope Tramways

NEW YORK CHICAGO ST. LOUIS DENVER SAN FRANCISCO

BALL GRANULATORS



5-7′x6′ Mills

As Shown

And 2-7½ "K" Gates Breakers

Will be installed in the New Plant of

The United Comstock Mines Company

Gold Hill, Nevada

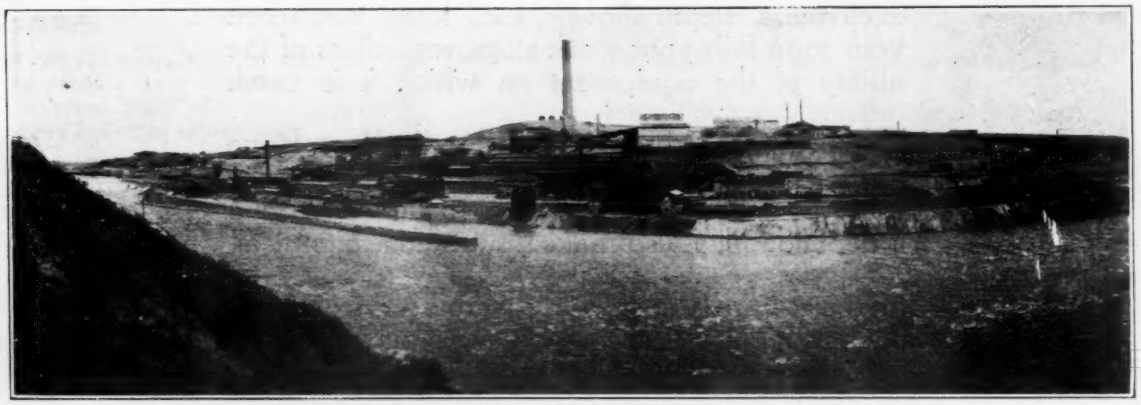
Capacity 2000 Tons per 24 Hours

ALLIS-CHALMERS PRODUCTS
Electrical Machinery
Steam Turbines
Steam Engines
Gas and Oil Engines
Hydraulic Turbines
Crushing and Cement Machinery
Mining Machinery

ALLIS-CHALMERS MANUFACTURING COMPANY

MILWAUKEE, WISCONSIN. U.S.A.

ALLIS-CHALMERS PRODUCTS
Flour and Saw Mill Machinery
Power Transmission Machinery
Pumping Engines-Centrifugal Pumps
Steam and Electric Hoists
Air Compressors - Air Brakes
Agricultural Machinery
Condensers



ANACONDA PLANT, GREAT FALLS, MONTANA

ANACONDA COPPER WIRE

TROLLEY, STRAND, TELEGRAPH, TELEPHONE, HOT ROLLED COPPER RODS

—FROM THE MINING OF THE ORE TO THE FINISHED PRODUCT—

ANACONDA COPPER MINING COMPANY

ROLLING MILLS DEPARTMENT

General Office: 111 W. WASHINGTON STREET, CHICAGO *Mills:* GREAT FALLS, MONTANA

COALITE

PACKED IN WHITE PAPER CARTRIDGES

The new line of Atlas Coalite, which is now made in a sufficient number of grades to meet every blasting requirement, includes a grade that is stronger, quicker, weaker or slower than any other permissibles on the market.

All requirements were fully recognized and this new series of Coalites covers every condition met in coal mining.

The Atlas Service Man will show you how these new Coalites offer opportunities for getting BETTER work with a saving in blasting costs. Write to our nearest office.

ATLAS POWDER COMPANY, WILMINGTON, DEL.

Branch Offices:—Allentown, Pa.; Birmingham, Ala.; Boston; Chicago; Des Moines, Ia.; Houghton, Mich.; Joplin, Mo.; Kansas City; Knoxville; McAlester, Okla.; Memphis; Nashville; New Orleans; New York; Philadelphia; Pittsburg, Kans.; Pittsburgh, Pa.; Pottsville, Pa.; St. Louis; Wilkes-Barre.

A PROPER EXPLOSIVE FOR EVERY BLASTING REQUIREMENT

American Zinc, Lead & Smelting Co.

Purchasers of

Zinc and Lead Ores

Address
1012 PIERCE BUILDING
ST. LOUIS, MO.

Exploration Department for the purchase of
Metal Mines and Metal Mining Companies

55 CONGRESS STREET BOSTON, MASS.

United Metals Selling Company

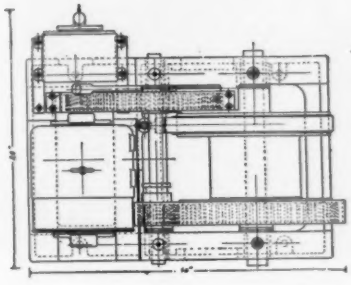
25 Broadway, New York

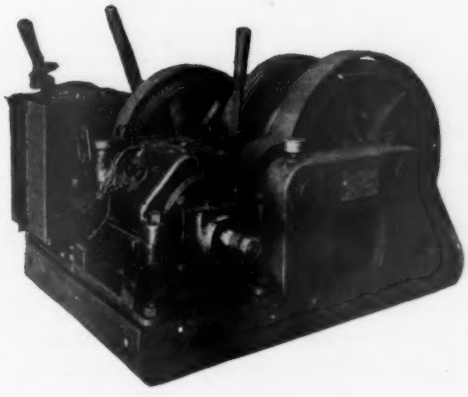
Electrolytic Copper
Best Selected Copper
Pig Lead—Desilverised Common and Corroding
Electrolytic Zinc
Highest Grade and Purity

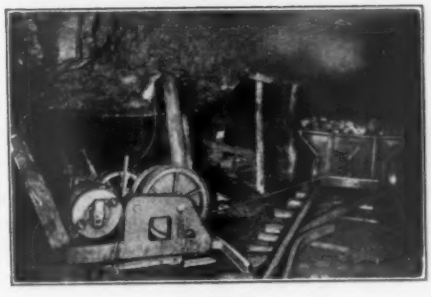
N E C & B M Brands
A B S & M A Brands
International (I.L.R.Co.)
Anaconda Electric

Selenium, Arsenic, Nickel Salts, Tellurium, Copper Sulphate

VULCAN HOISTS







PORTABLE ELECTRIC HOISTS

For Mine, Quarry and Construction Work

Compactness, simplicity of construction, power and mobility are the features which make a portable hoist economical.

The dimension sheet shows how small and compact is the latest standard VULCAN (of Wilkes-Barre) Portable Hoist. The mobility resulting from this compactness makes it an ideal unit to be used above or below ground, on bridges or construction work or down in a ship's hold to move heavy pieces from difficult corners to the hatchway.

When desired the hoist can be mounted on a truck of any gauge track to facilitate its rapid transfer from one place to another. Variations in design are possible to fit particular work.

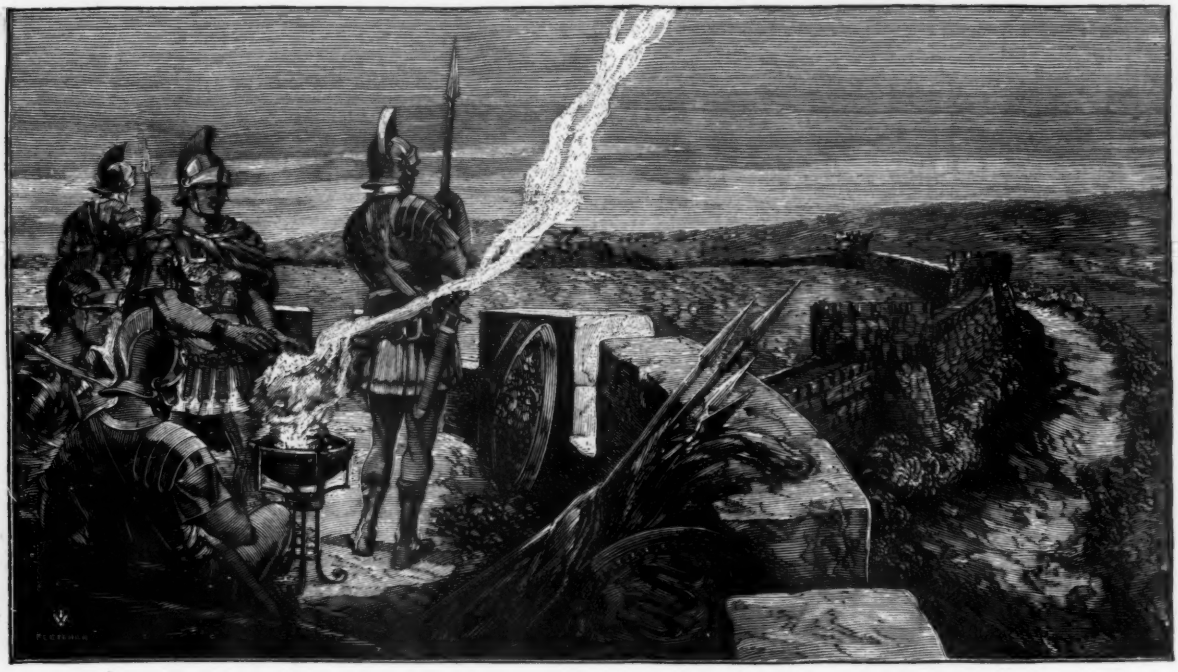
The services of our Engineering Department are at your disposal to advise and select the size and type of hoist best suited to your purpose.

Correspondence Solicited

VULCAN IRON WORKS

"Established 1849"

1736 Main St., Wilkes-Barre, Pa.



The First Known Use of Coal

Coal is known to have been used by the Romans who occupied Britain during the time of Hadrian, about 122 A. D.

But it was dug from outcrops with the infinite labor of picks, hacked loose piece by piece.

The outcrops were not many and the mining was difficult. Besides the sentinels who huddled over the braziers in the bleak weather, there were but a privileged few who were warmed by coal fires.

Among the ruins of Hadrian's Wall, cinders have been found—mute monuments to the efforts of the Romans. At Manchester—the Mancunium of Hadrian—ashes have been found and some of the ancient diggings discovered.

Now, explosives have made coal available to every one. In a single year the coal mining industry of the United States has used over 38 million pounds of Hercules Explosives.

On a recent test, in a western mine, over seven tons of coal were produced per pound of Hercules Red H Permissible Explosives.

Write to our Advertising Department, 934 King Street, Wilmington, Delaware, for a booklet on "The Scientific Selection of Explosives for Coal Mining".

HERCULES

POWDER COMPANY

Allentown, Pa.
Birmingham, Ala.
Buffalo, N. Y.
Chattanooga, Tenn.
Chicago, Ill.
Denver, Colo.
Duluth, Minn.
Hazleton, Pa.
Huntington, W. Va.
Joplin, Mo.
Los Angeles, Cal.
Louisville, Ky.
New York City
Norristown, Pa.
Pittsburg, Kan.
Pittsburgh, Pa.
Pottsville, Pa.
St. Louis, Mo.
Salt Lake City, Utah
San Francisco, Cal.
Wilkesbarre, Pa.
Wilmington, Del

The MINING CONGRESS JOURNAL

PUBLISHED EACH MONTH BY THE AMERICAN MINING CONGRESS, MUNSEY BLDG., WASHINGTON, D. C.

New York Office: 19 W. Forty-fourth St. Telephone: Murray Hill 0136
Chicago Office: 109 North Dearborn St. Telephone: Central 8744

Subscription Rate, per Year, $3.00
Single Copies 30

VOLUME 8 MARCH, 1922 NUMBER 3

TRADE INFORMATION

IT IS SOMEWHAT amusing to note the senatorial criticism of the correspondence between Secretary of Commerce Hoover and Attorney General Daugherty concerning the right of trade organizations to assemble and distribute the facts relating to the production, distribution and exchange of commodities. It must not be forgotten that this same Senate has but recently passed with practical unanimity a bill authorizing associations of producers of agricultural products giving practically unlimited authority to associations to market the products of the farm. The Senate, not so many years ago, enacted the Clayton act including Sections VI and XX of the Clayton act, both of which were primarily designed to enable labor to escape compliance with the provisions of the Sherman Anti-Trust law. In the early days of the present administration, Secretary Hoover being anxious that his department should be made a real Department of Commerce, a real aid to business, undertook the distribution of available information concerning business transactions and proposed that this information should as far as possible be secured through the agency of present trade organizations. About this time the so-called "hardwood lumber case" was decided by the district court and an appeal having been taken to the United States Supreme Court further action with reference to the distribution of trade information was held in abeyance until the Supreme Court should reach its conclusion. The Supreme Court decision having approved the decision of the lower court, Mr. Hoover after various conferences submitted to the Attorney General a series of questions relating to the activities of trade associations designed to secure the opinion of the Attorney General concerning the limitations upon the activities of the Department of Commerce in its effort to better serve the business interests of the country. Whether two or more individuals may jointly secure information necessary to the economic and efficient conduct of their business, which every business man is permitted to do without question, is the real issue. No productive enterprise could be carried on without an adequate knowledge as to the probable markets in which its production is to be sold.

The Attorney General's reply to Secretary Hoover's request for information concerning the legality of trade association activities, which appear on page 630 of this issue, closes with the following statement:

"Therefore, the expression of the view that the things enumerated by you * * * may be done lawfully is only tentative; and if in the actual practice of any of them it shall develop that competition is suppressed or prices materially enhanced, this department must treat such a practice as it treats any other one which is violative of the anti-trust act."

This correspondence hardly justifies the caustic criticism of Senator Norris in which he states:

"It seems to me quite evident that whatever if anything is left of the Sherman anti-trust law as applies to big business has been repealed by Mr. Hoover in this article. If it means anything, it seems to me it means that in the future no attempt will be made to prosecute big business because it combines or forms a monopoly, providing it is done according to the methods mapped out in Mr. Hoover's letter which means in effect, as I understand the article, that business concerns that want to combine and form a trust or a monopoly have only to announce that their combination is not in restraint of trade and is not a monopoly, at least as far as can be ascertained on outside observation."

It seems quite apparent that these criticisms were made without careful reading of Mr. Hoover's communication to the Attorney General. It is apparent, also, that the Secretary of Commerce is anxious to aid business by the organic act which created his department and it seems that an effort to ascertain the exact legal limitations which surrounded this service should call for commendation rather than criticism.

LABOR AS A COMMODITY

THE GOVERNMENT has a right to say that two or more men shall not combine together to restrict production or enhance the price of any commodity. Very unfortunately Congress has determined that labor is not a commodity. Therefore, labor unions may conspire to restrict the output and fix the price at which their labor shall be sold. This declaration of Congress that labor is not a commodity is unfortunate because it is illogical.

At least seventy percent of all commodities offered for sale consists of labor. To say that an article which is largely made up of my service is a commodity, and that I cannot sell my service to another when I am either unable or unwilling to provide the material to which the service must be applied to create a commodity is a phraseological travesty. The fact is that labor and capital should stand equally before the law. Each should be permitted, as in fact each is required, to meet the law of supply and demand and through its operation to secure the price which is the incentive to all industrial effort.

LABOR POLITICIANS OR LABOR STATESMEN

MANY OF THE best friends of labor have been or are being alienated by the failure of labor leaders in the face of economic facts to give evidence of wise and farsighted direction of labor policies.

For the last fifteen months the bituminous coal industry has been stagnant. The total production for 1921—407,000,000 tons—is the lowest record for ten years. Yet during this time in the face of widespread industrial depression the heavy liquidation of agricultural producers and other industries, of increasing unemployment and the closing of mine operations throughout the central competitive district, the leaders of the United Mine Workers have stubbornly refused to even consider a reduction in wage scale, a wage scale which is based on a minimum of $7.50 per day and is at the very peak level of war-time wages.

The inevitable result of this policy is evident. In the non-union districts where a reduction in wages was possible new records of coal production have been made and non-union coal has not only dominated all of the nearby markets but has successfully invaded markets at remote distances underselling the local production and closing down hundreds of mine operations. The policy of the labor leaders has been the direct cause of decreasing the number of men employed in the industry and of decreasing the time of employment for those working in mines which were not shut down. This policy has caused an increase of suffering and is weakening the labor organizations.

The United Mine Workers during the last twenty years has been a dominating influence both in the anthracite and bituminous coal industries and in these basic and essential industries the power of the labor unions has been almost complete.

The real strength of the United Mine Workers and the success of the organization has been due primarily to the fact that in many coal mining districts the operators have considered the establishment of a uniform wage scale through negotiations between the representatives of the coal operators and of the central labor organizations to be of very definite benefit to their own interests. The coal operators have considered the wage scale as the one stable item in a series of varying and widely different costs and have believed that the uniform wage furnished some protection to them from cut-throat competition and vicious underselling of the markets.

The extent to which this feeling prevailed among coal operators made opposition less radical to the check-off system whereby the operators deduct from the pay envelopes the dues of the labor union, thereby making every worker of necessity a contributing member of the labor organization. The check-off system has given the labor unions a large income and the possibility of levying special assessment at any time.

The abuse of power by labor unions during the war and their attitude during the last fifteen months have created a very different feeling on the part of the operators. The coal operators in the union districts now realize that the power of the union has been built up to such an extent that it is extremely dangerous from the standpoint of the coal industry in the central competitive field. The failure of the unions to extend unionization of the industry to West Virginia and eastern Kentucky and the rapid development there of splendid coal deposits leaves the coal operator in the central competitive district face to face with the dilemma of either closing down mine operations or of securing a reduction both in wages and in the power of labor officials to dominate the all important cost in his mine production. It is claimed that the non-union fields now have a capacity of production of nearly six million tons a week and with the present industrial demand this is sufficient to supply the essential needs of the entire country.

Under these circumstances it is evident that the issue between the operator and the labor union in the bituminous coal industry is no longer a question of wage reduction but it is rapidly resolving itself into a question as to the continued existence of labor union abuses. The inherent weakness of practically every elective organization in which the office holders seek to retain their positions irrespective of what sacrifices of sound principle must be made is again emphasized in the attitude of the leaders of the United Mine Workers. Instead of facing economic facts and assisting in a movement toward a liquidation of costs and therefore of prices in the coal industry the labor leaders seeking to hold their offices have been playing politics and by their lack of statesmanship have placed themselves in a position where they have jeopardized the entire existence of an organization which has been a citadel of labor union strength throughout the entire country and which under the wiser leadership of former years has shown such a successful growth.

It is the old story "the mills of the gods grind slowly but they grind exceedingly fine," and the abuse of power on the part either of labor organizations or of combinations of capital inevitably results in failure.

FAITH AND FORESIGHT

THE MINING INDUSTRY in its developed enterprises and in its successful men possesses many monuments to faith and foresight.

These enterprises have sprung into being and these men into success because surface conditions did not prevent discernment of what lay beneath and because of a firmness of conviction that vaulted handicaps in days gone by.

It will not be many years before the resources which have been developed by the faith and foresight that already has been exercised will be depleted.

The following statement by the Director of the Geological Survey is proof:

"In the last fifteen years we have mined and smelted more lead than in nearly two centuries before; in the last thirteen years we have mined more coal and in the last eleven years more iron than in the whole of the century and more before; in the last nine years, more copper than in the sixty-seven years before; and in the same nine years, more zinc than in the fifty-four years since zinc mining began in the United States.

"Most thought-provoking, however, is the fact that our country has produced more petroleum since the outbreak of the World War than in all the years before 1914."

With these facts coming from such high authority, no person or group of persons connected with either the legislative or executive branches of the government can risk a future plight for the nation by committing any action that may in the future place a handicap upon the development of substitutes for the natural resources we now are consuming and depleting at such rapid rates.

If a Federal blue-sky law is to be enacted, let those who mould it and pass it through the legislative mill be certain before they act that the measure will in no way handicap those who are possessed of faith and foresight in their efforts to develop in the present those of our resources upon which the nation will be dependent in the future.

THE MINGO DISTURBANCES

SENATOR KENYON in his individual report as chairman of the sub-committee appointed by the Senate Committee on Education and Labor to investigate the West Virginia coal situation says that "the right of operators and miners to bargain collectively through representatives of their own choosing is recognized and affirmed." A dual meaning will be placed upon this affirmation. A miners' union will regard it as justifying its right to say to the operators, "These are the terms upon which we will work and unless accepted we will not permit you to operate your mine." This has been the position in the past and will be again. It is probable that within the next few months operators will be forced to protect their property from destruction at the hands of those who make these demands. The MINING CONGRESS JOURNAL believes thoroughly in the right of workmen to organize, in their right to insist upon their demands by collective action so long as they do not interfere with the right of the operator to hire whom he pleases at such terms as he is willing to make; in fact, the right of bargaining by the operator as well as by the miner.

Senator Kenyon states that the "miners who are not members of a union have the right to work without being harassed by fellow-workmen who may belong to unions." All of the trouble in the Mingo Field is the result of a denial of this principle. Non-union men were there employed and the fact that that field has produced more coal during the labor trouble of the last year than ever before in its history is proof that the men were reasonably well satisfied with their conditions. All of the trouble in that field has been brought about by an effort of the union to force these non-union men to either quit their work or join the union. The right of the operators and miners to bargain upon mutually satisfactory terms has been contested by the labor union and, in order to enforce this contest, property has been destroyed, lives have been sacrificed, the government has been defied and practically every crime in the category has been committed with no other excuse, no other reason, no other purpose than to unionize these fields in order that the whole production of coal might be brought under the domination of the union and thus give the United Mine Workers of America absolute control of the production of a prime necessity of existence. Senator Kenyon condemns the union for acts of violence which he says bordered close on "insurrection against government" and at the same time condemns the operators for trying to prevent the unlawful acts of the union and for their efforts in attempting to protect their property from destruction. We cannot escape the conclusion that Senator Kenyon's report is more a statement of his personal views concerning relations of labor and capital than of the result of his investigation of the Mingo county outrages which, if permitted to go unpunished, lead the way to a complete destruction of government.

The real question is whether a small minority by concerted action shall be permitted to enforce their demands in such a way as to deny the rights guaranteed by the Constitution, in such a way as to abrogate the right to bargain either collectively or otherwise. Most of the great labor disturbances have been the result of union effort to unionize non-union fields; to abrogate the right of bargaining; to create conditions under which non-union men shall not have the right to work, giving the union absolute control and through this plan to permit a minority to control the majority—a principal entirely subversive of democratic government.

MUSCLE SHOALS

THERE IS URGENT necessity for the permanent development for the general good of the people of the United States of the water power at Muscle Shoals.

We are a hopeful people. It is our boundless optimism that has made America what it is today. We share this hope and optimism with other Americans. In discussing with them on the street, in the groceries, in the barber shops and in the Houses of Congress the necessity and desirability of the Muscle Shoals project, to the question: "What do you think about Muscle Shoals?" invariably the reply has been: "Muscle Shoals ought to be developed."

That's what we all think. That's what we have thought for many years. With the proposed development of Muscle Shoals there has recently been coupled in our minds its development by Henry Ford. In common with many millions of other Americans, we have said to ourselves: "Oh, well, let Henry have a try at it." The two propositions seemed to be identical—the development of Muscle Shoals and the development of Muscle Shoals by Henry Ford. We had, like many others of us, looked upon him as a sort of an international Santa Claus—a prestidigitator of mechanics and finance.

We fear we were expecting him to take cheap fertilizer out of a silk hat. Then suddenly one morning we read his proposal to raise the $75,000,000 which must be spent on this property in order to have it in shape to produce fertilizer—to raise this money with a printing press. Mr. Ford makes the statement that money could be issued on the basis of the potential water power yet to be developed at Muscle Shoals. Without doubt this is the unsoundest of all the unsound money proposals that has ever been made to an eager, hopeful, harassed people. And when this proposal was read light dawned on us. We suddenly realized that we had been considering the development of Muscle Shoals and its development by Henry Ford as one and inseparable.

We realize now that they are not coincident and collateral conditions and that this Muscle Shoals development is too far-reaching in its national importance to be hastily intrusted to an individual, at least under a contract whose proposals of service to the whole people are as indefinite as they are in the Ford offer and whose guarantees from the whole people will call for an expenditure through the government of the United States, of $75,000,000 to develop a water power to be turned over exclusively to Mr. Ford and his heirs in perpetuity.

A GOOD TRICK—IF YOU CAN DO IT

THE PROGRESS of thought of some of our major industries through their development under tariff protection is interesting. Having achieved the financial solidity necessary to their own life they now use their energy mainly to keep those materials which they must buy on the free list. They want, for example, free manganese ore and protected ferromanganese, or free manganese ore, free ferromanganese, and protected steel products, depending solely on how far up on the economic ladder they stand. To support themselves and industry above them on the economic ladder and kick off every industry below is no easy feat of tariff acrobatics. And we do not predict for it much applause from the industries, the legislators or the tariff advisers who make up the audience.

SPECIALISTS IN NEW PLACES

THE REMARK has been made countless times that this is the Age of Specialization. It is true. The machinery of our industrial world proves it as a fact.

Specialists are numerous everywhere. The industry of our country supports them in hosts.

Accustomed as we are becoming, however, to the presence of men who specialize in this, that or the other thing, it is with some small sort of surprise that they are found to be working their way into the machinery of this steadily grinding government of ours, which has been running along so much in the fashion of a huge barge and for so long a time that it naturally would seem to show an aversion to innovations.

It is doubtful if any single administration, save only the one which actually initiated the Republic, has brought so many changes into the procedure of government business as the one now in power.

Under one of these innovations which is planned for the Labor Department, men who are especially familiar with individual industries will be occupied entirely by studying labor conditions of these industries and trying to solve labor difficulties which arise within them.

The original plans, outlined in the first annual report to be submitted by the present Secretary of Labor, proposed that twelve of these specialists in labor conciliation be appointed to handle the labor questions arising within as many different industries.

Congress, however, evidently will not supply sufficient funds for this program to be carried out in its entirety, but officials of the department declare that at least three or four of these specialists will be appointed under funds in hand to take up the department's conciliatory work relating to the most important industries.

Thus it may be that the coal industry in the future will find in the Department of Labor a man who, day in and day out, will work on nothing but its labor problems. This man must be of the type which the Secretary speaks when he says that the man selected must be "of the broadest gauge" and "must know his special industry from top to bottom." Continuing his specifications of the man desired, Mr. Davis says:

"He must also know something of the operation of management, so as to have the necessary understanding of the problems and hazards that go with the handling of business."

For the position to be filled by a man not holding the qualities called for in these specifications would be to minimize the success of this concession to what the Department of Labor evidently believes to be the demands of this Age of Specialization.

A NECESSITY AND A BOON

EARLY IN MARCH a group of men highly familiar with the mining industry in its most technical phases will meet in Washington for the purpose of inaugurating a system which will stand as possessing a large share of benefits for the men who work in mines. These men, representing twenty-five organizations comprising the membership of the Joseph A. Holmes Safety Association, will pass upon committee recommendations covering the proposed organization of local chapters of the association in mining camps throughout the country.

The local chapter plan will increase by many fold efforts to cultivate conditions inviting safety. This will be accomplished mainly through the development of individual pride in being a part of a tangible organization, and in stimulation of the natural desire to excel over other units of such an organization in accomplishing the aims for which it is founded.

The local chapter, as it is planned, has received the approval and will receive the support both of the operators' and the miners' organization. Thus it comes into the larger light of providing a common plane upon which these two economic classes may meet and work most efficiently for the development of safety, which will in turn present its results in terms of accidents prevented and lives saved.

Then, going beyond the first and broadest effect which the plan will bring about, the sociological benefit presents itself. These chapters will in many cases form the nucleus of a social sphere in mining camps where the need of such a center of activity now is evident. Where those local organizations now existing which may be compared to those which will be created under the new plan are operating, the breadth of social activities has been increased.

The mining authority who, in anticipating the benefits which the plan will bring to those engaged in the industry, has expressed himself as believing it to be one of the largest single aids to the promotion of safety and welfare among miners, certainly is not indulging in exaggeration, and clearly outlines the position which the proposed activities will occupy in the comparatively near future.

METAL MINING AND DEFLATION

DURING THE PAST eighteen months metal mines have passed through a very trying period. Prices dropped below pre-war levels, while railroad rates were held far above those of the pre-war period, and state taxes, not only remained above pre-war levels, but steadily increased.

Surplus stocks, which began to accumulate as prices receded, were sold at enormous losses; and curtailed production caused acute distress among the wage-earners, besides resulting in the loss of freight tonnage to the railroads.

The great latent demand for all metals, especially copper, lead, zinc and tin, can not be supplied until prices advance to a point where excessive taxes and transportation costs can be absorbed without continued financial loss to the producers, or state taxes and railroad rates are reduced to a level where they will not exert an oppressive influence upon production. When one or the other of these conditions exist, construction will start and building activities of all kinds will be resumed.

The metal mining industry has not been lax in its efforts to bring about normal conditions. Drastic wage and salary reductions of from 20 percent to 30 percent, and similar reductions in all other expenses, have resulted in slight stimulation and some improvement; but this improvement has not been sufficient to meet the excessive costs which can only be reduced by the state or Federal governments, and over which the industry has no control.

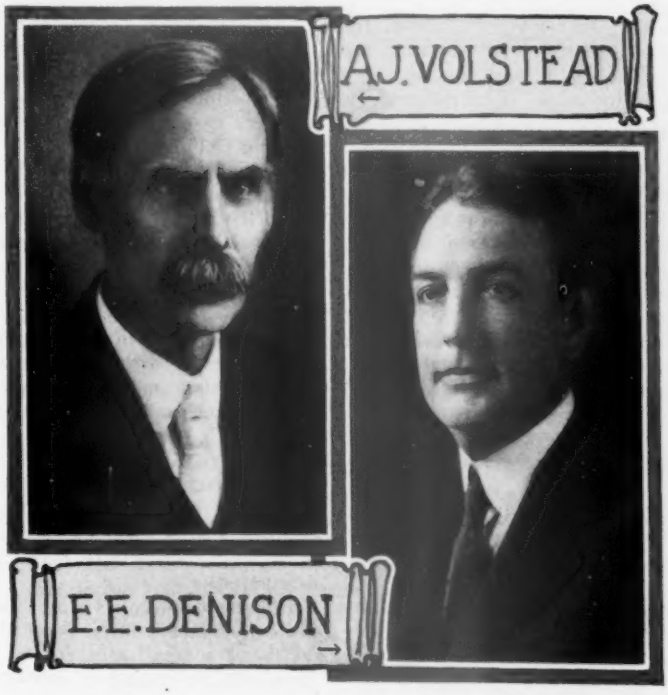
In order to secure a normal adjustment of conditions, every industry should make its contribution to whatever program is necessary to restore a proper relationship between costs of production and selling prices. Not even the railroads should be permitted to escape their just proportion of the financial loss which the other basic industries of the country have been compelled to bear in deflating costs and prices. And the states should do their part by effecting rigid economies during this period of readjustment and thereby reduce taxes just as certainly as should the Federal Government.

FEDERAL BLUE-SKY LEGISLATION PROPOSALS REVIVED IN CONGRESS

PROPOSED FEDERAL blue-sky legislation has been revived in Congress, after resting for almost a year in the comparative obscurity of a committee "pigeon-hole." Radical changes in the proposals based upon suggestions recently made by financial interests and state securities commissioners, have thrown a new light upon the resurrected subject by eliminating opposition to such legislation formerly held by the investment bankers of the country.

The bill offered last year by Representative Denison, Illinois, has been made the subject of sweeping amendments and moulded into a new measure which was introduced in January and on which hearings began February 15 before the House Committee on Interstate and Foreign Commerce.

The only other bill now before Congress proposing Federal action in efforts to eliminate from the financial affairs of the country all illegitimate securities transactions is the measure introduced by Representative Volstead, Minnesota. This bill was introduced originally in the Sixty-sixth Congress, later being changed and framed into a new measure. No action has been taken upon it since the hearings held in 1921, and, since it is the general opinion that it is less practical than the Denison bill, those who are in close touch with the situation declare it to be a "dead" measure.



Congress, the Department of Justice and the Federal Trade Commission are interesting themselves in efforts to protect the public from vast losses alleged to have resulted from illegitimate transactions in securities. Representatives Volstead and Denison are the authors of the two bills now before Congress proposing Federal blue-sky legislation

The present Denison bill, which was carefully framed by representatives of the investment bankers and a committee of the national association of state securities commissioners, working with Mr. Denison, therefore stands as the measure by which success or failure of efforts to enact a Federal blue-sky law at the present time is to be gauged.

The Denison bill now holds these new features:

1. A list of securities which are exempted from its provisions. This list was drawn up at a series of conferences between the bankers, the securities commissioners and the author of the bill, and is supposed to incorporate every practical exemption found in the blue-sky laws of the forty-two states that have enacted laws on the subject.

2. The bill is limited in scope to interstate transactions. The first Denison bill covered both interstate and intrastate dealings in securities. During the conferences held previous to introduction of the new measure, however, it was decided that the individual states should be able to take care of the situation within their respective boundaries.

3. A clause has been added which provides specifically that the bill shall be interpreted as supplemental to and in no way conflicting with state blue-sky laws.

That the bill is fairly certain to gain a favorable report from the committee appears to be a fact, especially in view of the almost unanimous favor with which the committee regarded it in its previous form despite the objections, now removed, which then were being voiced by the investment bankers. With the bankers and the securities commissioners both avowedly content with the measure as it now stands, there is little likelihood that the committee will make any changes.

Mr. Denison, in opening the hearings last month by outlining the purpose of his bill, told the committee that the measure was not intended to supplant any state measure, but rather to supplement them and increase their efficiency by preventing interstate transactions in illegitimate securities.

He pointed out that promoters of illegitimate schemes are evading state measures by basing their operations in states adjoining those in which the stringent statutes are in effect, doing their business by mail and through other mediums of interstate communication. By making these communications illegal, as well as the use of interstate communications to circularize or place before the public the illegitimate promotions, Mr. Denison said his bill would do much to eliminate the activities of those who now are finding it a comparatively easy matter to evade the existing laws.

J. F. Callbreath, secretary of the American Mining Congress, in his testimony before the committee, while making it plain that he appeared neither as advocating nor protesting against the bill, urged distinction between securities in established enterprises and those for which money must be secured for the development of prospective enterprises necessarily hazardous before

development. He pointed out the wasting character of the mining industry and the necessity of stimulating the development of new mines to take the place of those now in operation which sooner or later must be exhausted.

He stated that development of the huge porphyry copper deposits in Utah, Nevada, New Mexico, and Arizona would have been very difficult if not impossible under Blue Sky Laws, such as now exist in many states, and also the farsighted operation in low grade iron ores in Minnesota, development of which will be necessary to sustain the iron industry when the high grade iron deposits of the country shall be exhausted, their depletion being expected in from 12 to 20 years.

The possibility was advanced of combining the provision of the Pardee law, adopted in several states following approval given it at the Denver convention of the American Mining Congress in 1906, with those of the British Companies, act, which latter measure had been suggested to the committee by A. J. Woodruff, of the Fersul Chemical Corp., Washington, as a basis for Federal Blue Sky legislation in this country.

Mr. Woodruff suggested that the U. S. might secure a simple and efficient protection against fraudulent securities transactions by adopting the British law, which provides that the enterprises seeking promotion shall file with the government its plan of action, costs, and a statement of percentage of profits which the promoters will derive. He also suggested that securities be plainly stamped as "treasury" or "non-treasury," indicating the actual amount of the money going into the enterprise. He made the direct statement that many state blue sky laws are not accomplishing their desired results and said that only by Federal action can the states, which have found their own legislation unable to cope with the situation, secure protection.

Included in the testimony was an affidavit by Maytor Hoppenyan, in which are outlined the experiences of the Idaho Copper Company in its efforts to secure approval of its securities transactions by the Minnesota Securities Commission. The affidavit gives details of the company's organization and continues::

"Finally, when no other excuse was available for not granting us a license, Mr. Pierson, the chairman of the commission, told Mr. Griggs and myself that since he became chairman of the commission they had not granted any license to mining companies and that he did not think they would do so. We felt that this was an unfair attitude toward the mining industry, and Mr. Griggs took the matter up with the Governor. After this we were told that the plan of organization of our company would be passed, but that the commission insisted that their engineer, Mr. Oberg, of Duluth, must make personal inspection of the property and that we would be obliged to deposit $500.00 toward his expense account, and would also be obliged to pay for his services and all of his expenses incurred for such an examination as he considered necessary.

"The writer called on Mr. Oberg and submitted copies of these reports and discussed the situation. Mr. Oberg informed me that the commission would not grant us a license only upon a favorable report made by him after a personal inspection of the property, regardless of the reports of any other engineers. He said: 'It is a ruling of the commission not to consider any engineer's report other than my (Oberg's) own.'"

That enactment of the Denison bill might furnish a basis for a simplification of the various state laws, provisions of which run through a wide range of variations, was the possibility advanced by E. S. Canright, member of the Securities Commission of Wisconsin, and spokesman before the House committee for the securities commissioners' association. He emphasized the fact that no additional machinery is proposed by the new bill and that it does not set up Federal control, but leaves with the states their rights to protect themselves by their own laws, merely extending the authority of their statutes to cover operations coming within their boundaries from other states.

Mr. Canright declared that, although difficulty had been discovered in the conferences held on the bill in connection with the task of drawing a line that would prevent fraudulent transactions and still would not stifle legitimate industry, he felt that this had been accomplished. He stated that both the commissioners and the investment bankers were "greatly delighted" with the bill.

An indication of the opinions held by members of the mining industry in regard to the practicality and advisability of a Federal blue-sky law in its application to operations of that industry has been obtained through answers to a questionnaire circulated by the American Mining Congress.

Replies to the questionnaire show the mining industry as equally divided on the subject, although a small majority is indicated as favoring the principle of a national law for control of the United States mails and other agencies of interstate and foreign commerce over which the states have no control.

A three-to-one majority is expressed against the provisions embodied in the Volstead bill. While a substantial objection to the Denison bill is voiced, it is highly probable that many who replied had in mind the first bill and have not had an opportunity to acquaint themselves with the provisions of the new measure, which amount practically to embodiment of the principle that the Government's part in the matter be restricted to legislation calculated to eliminate "shady" interstate transactions, a proposal with which many others than those who answered in favor with the Denison bill are in sympathy.

Efforts to unify all state blue-sky laws would receive the support of a large percentage of the mining industry, only a small minority of those who answered the questionnaire failing to express approval of such a program.

Answering the question "Do you approve of your state law controlling the sale of securities?" those who replied in the affirmative were in slightly greater numbers than those who are not satisfied with the existing laws under which they are operating. Another close division of opinion is found in answers to the final question which asks if "blue-sky" laws are believed to retard legitimate mining enterprises.

An interesting expression on the subject is found in the following extract from one of the most comprehensive answers received:

"My present belief is that blue-sky laws should be restrictive only as to a few major points; that they should not make any express or implied attempt to guarantee investments; they should, on the other hand, hold wide open the door to speculation, without which our resources or our great business enterprises, discoveries or inventions could not have been developed or brought into being.

"In brief, I think that the laws will have done their part if they can see to it that the statements of the promoters are true and that their predictions are not manifestly hyperbolic, that the promotion "rake-off" is not unfairly large, that the money to be raised is to be spent for the purposes intended and that these intentions are made known and are not such as to duly enrich the promoter at the expense of the investor, and that the

scheme for which the money is being raised is not fundamentally impossible."

In reviewing the replies in which objection is raised to blue-sky laws, it is found that the majority of the protests center around actual administration of the laws, rather than their form, the chief criticism being that men who are placed in positions to pass upon whether securities are or are not of legitimate character do not possess the technical knowledge necessary to enable them to intelligently survey in advance the prospects of so highly a complicated and technical proposition as a proposed mining development.

Not only has discussion of blue-sky legislation been awakened before Congress, but two administrative agencies of the Government have turned their attentions within the past three weeks to related subjects.

It is known that Attorney General Daugherty was called upon to lend his views to the framing of certain sections of the Denison bill, and it is probably following this that his interest in the subject was extended to the point of making an inquiry as to the number of cases now pending in Federal courts, defendants in which are charged with having violated blue-sky laws or statutes covering similar offenses. Mr. Daugherty's statement shows a total of 480 such cases now pending, in which 874 persons have been arrested or indicted for alleged "swindles" amounting to $140,000,000. A large proportion of these cases, he says, are based upon transactions in oil and mining stocks alleged to have been illegitimate. Prominent among the suggestions which he offers as means of reducing unlawful transactions of this type is one which emphasizes the necessity of unification of the various state laws. He is of the opinion that the states should place more care in the administration of penalties imposed for infraction of their laws governing securities.

The Federal Trade Commission has undertaken a definite campaign to be directed against oil companies who are selling illegitimate securities. The Commission already has announced formal complaints which it has brought against five oil companies with a total capitalization of something over $12,000,000, the charge being that these companies have inaugurated a policy of promotion and stock selling which is fraudulent in the extreme.

In addition to these five cases, the Commission holds several other complaints against oil companies on its books, but it is declared that new legislation is needed before real protection can be given to investors. The general opinion is that this new legislation should take the form of a unification of the state laws which would enable legitimate enterprises to extend their operations through several states with a minimum of concern as to the provisions held in force in each state, and that a simplification of the blue-sky code would result in additional convictions of those guilty of indulging in practices frowned upon by the law.

"This is the only nation that has not a blue-sky law," an official of the Federal Trade Commission was quoted as saying in connection with the newly-placed complaints. "It would not be hard to pass such legislation as would almost entirely put to an end the flinching of half a billion dollars from the public each year."

FINLAY HOLDS UNDEVELOPED RESOURCES OF NO APPRAISABLE VALUE

IN HIS REPORT recently submitted to the New Mexico State Tax Commission, appraising the mines and mineral lands of that state, J. R. Finlay, Mining Engineer, disposes of the question of what value should be placed upon undeveloped and non-producing mining lands by declaring that such properties contain no additional value on account of the fact that they contain coal or metal, supposedly in some cases, certainly in others.

Appraisal of mines for purposes of taxation has always presented many elements of speculation and doubt, especially in the case of undeveloped and unproductive properties. It has been the practice in a number of states to assess such properties at values arbitrarily fixed by local or state authorities, frequently on an unscientific and entirely problematical basis. "Who is to decide," Mr. Finlay asks, "what lands will be worked 50 years hence and which 100 years hence?"

Explaining his report, Mr. Finlay says:

"In cases where 'the value of mining operations' is put down at zero, the appraised value reverts to balance of quick assets.

"Where the property is valued as a business the quick assets are generally needed for working capital and should be added to the 'value of mining operation' which becomes the entire appraised value.

"In some cases there is doubt as to the balance of quick assets because the operators did not understand the questionnaire; some apparently reporting quick assets without deducing current liabilities."

He makes the statement that the values given are the prices that prospective buyers could be justified in paying for the properties from their record of production, and adds: "I find no warrant for putting a value upon the undeveloped coal of the state. One might as well put a value upon limestone or granite. Is not limestone made into lime, and cement and granite into buildings and statues? Have not fortunes been made out of cement factories and granite quarries?" He states that all of these resources are worthless until an industry is started upon them, declaring that practically the entire value is in the plants in the case of the coal industry.

STANDARDIZATION BULLETIN NOW AVAILABLE

A FUND OF VALUABLE information for mine operators and engineers who are interested in mining equipment standardization and improved mining practice is contained in the Second Standardization Bulletin, just published for free distribution by the Standardization Division of the American Mining Congress.

The bulletin contains recommendations of committees representing the coal and metal branches of the division, forming the composite opinions of minings operators, engineers and manufacturers. It also includes discussions of the reports presented at the Second National Standardization Conference, held in Chicago, October 17 to 22, 1921.

In distributing the bulletin throughout the mining industry, the Standardization Division seeks to inspire a widespread interest in this important work, which should be indicated by the constructive criticism by the industry. All such criticism will be referred to the proper committee for careful consideration.

LEGAL STATUS OF TRADE ASSOCIATION ACTIVITIES DEFINED BY ATTORNEY GENERAL

TRADE ASSOCIATION activities are not illegal so long as they are not handled in such a way as to form a "scheme or device to curtail production or enhance prices." This is the conclusion reached by Attorney General Daugherty in his answer to eleven specific questions submitted to him by Secretary Hoover for the purpose of securing a basis upon which the government's policy in interpreting the Hardwood case decision might be so construed as to offer the maximum possible guidance to industry.

Correspondence which has passed between the two Cabinet members on this subject recently was made public. Letters written by the Attorney General to the Secretary of Commerce emphasize the point that it is impossible "to determine in advance" just what the effect will be of any plan that may be adopted by a trade association, but that as soon as the Department of Justice discovers any plan which is operating with the result of "stifling competition or enhancing prices" action will be taken.

Reserving the point that any trade association activity may be construed as violating the law if it results in a restriction of competition or an enhancement of prices, the Attorney General has given his approval to the following association activities upon which his views were requested by Secretary Hoover:

1. Provision for members of a standard or uniform system of cost accounting, with recommendations for its use.

2. Advocation and provision of uniformity in the use of trade phrases and trade names by members.

3. Standardization of quality and grades of product for members; standardization of contract forms, production processes and machinery; cooperation for determination of means of eliminating wasteful industrial practices and for the raising of ethical standards in trade.

4. Collection of credit information as to the financial responsibility, business reputation, and standing of those using the products of the industry and furnishing such information to individual members of the association upon request.

5. Arrangements for handling of the insurance of its members, including fire, industrial, indemnity, or group insurance.

6. Engagements in cooperative advertising for the promotion of trade of members, and activities in this form of promotion by the association furnishing trade labels, designs, and trademarks for the use of its individual members.

The Attorney General at first expressed his opinion that approval could not be given to these activities since "when several producers or dealers use uniform trade labels, designs or trademarks it seems to me the inevitable result would be a uniformity of price." In answer to this Secretary Hoover advised the Attorney General that he could consider last clause of section 6 as eliminated, since authority was desired only that the associations be permitted to make the trade-marks of each individual member distinctive rather than common. This was finally approved, it is understood.

7. Promotion of welfare work in the plants or organizations of members.

8. Handling of all legislative questions that may affect the particular industry, regarding factories, trades, tariff, taxes, transportation, employers' liability and workmen's compensation, as well as the handling of rate litigation and railroad transportation questions.

9. Promotion of closer relations between the particular industry and the Federal and state governments.

10. Collection of statistics from each member showing his volume of production, his capacity to produce, the wages paid, the consumption of his product in domestic or foreign trade, and his distribution thereof, and compilation of this information into a consolidated report, to be filed with the Secretary of Commerce for distribution by him to the members of the association through the public press or otherwise and to the public generally.

11. Reports by members of prices they have received for the products they have sold during the period covered by the report, provided the method of making public the consolidated report as outlined in section 10 is adhered to.

In summing up his request for information from the Attorney General on the subject, Secretary Hoover asked if "trade associations may engage in any or all of the activities named without violating the law, provided the organization and the activity engaged in are not for the purpose of hiding or concealing some agreement, contract, etc., to actually restrain trade or otherwise violate the anti-trust laws?"

It was to this that Mr. Daugherty answered that he could see nothing at present in the exercise of the activities mentioned, provided always that "whatever is done is not used as a scheme or device to curtail production or enhance prices, and does not have the effect of suppressing competition."

WATER-POWER DEVELOPMENT ONE-THIRD OF MINIMUM POTENTIAL FIGURE

DEVELOPED WATER-POWER in the United States amounts to 7,852,948 horsepower, supplied by 3,116 plants with a capacity of 100 horsepower or more, according to a report just issued by the Geological Survey, which shows the potential water-power resources of the country to be a minimum of 27,943,000 and a maximum of 53,905,000 horsepower.

Interesting comparisons are obtained by setting these figures against those which were obtained by the Bureau of the Census in its survey of water-power resources in 1908, when it was found that only 602 plants had capacities exceeding 1,000 horsepower, with a combined output of 3,900,000 horsepower, leaving 1,457,000 horsepower distributed among 30,935 plants, which thus had an average of only 47 horsepower. This total of 4,357,000 horsepower, furnished at that time by all the plants in the country, is now exceeded by over 3,000,000 horsepower by the output of those plants alone which have capacities of over 100 horsepower, 79 percent of which are public-utilities plants, with the remainder furnishing manufacturing enterprises.

New York still maintains its position as the leading State in the amount of developed water power, with 1,291,857 horsepower; California is a close second, with 1,149,099 horsepower; Washington is third, with 454,356 horsepower; Maine closely follows in fourth place, with 449,614 horsepower; and Montana is fifth with 344,420 horsepower.

STANDARDIZING UNDERGROUND TRANSPORTATION IN METAL MINES

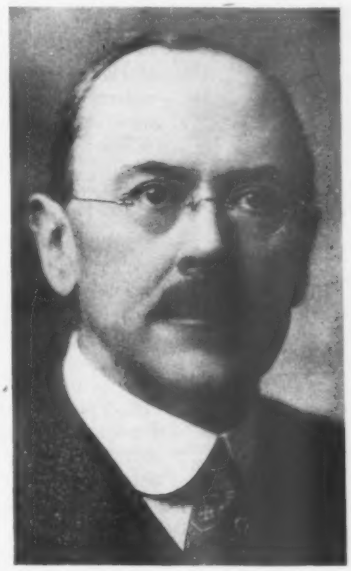
By Wm. B. Daly*

UNTIL recently, the subject of standardization of mining methods, practices and equipment had not been given any consideration. Keen competition in the cost of production has forced the operators to cut the cost whenever and wherever possible. Progressive mining operators realize that a large amount of money is wasted annually and costs correspondingly increased by continuing obsolete methods and by purchasing specially designed equipment for mining purposes.

It is impossible for one operator to bring about a standardization of mining methods and equipment, excepting at his own properties. As a general proposition, it can be accomplished only by the assistance and cooperation of all operators.

Realizing the urgent necessity for a movement of this kind, the American Mining Congress, about two years ago, created and established a National Standardization Congress, which meets annually in conjunction with its annual convention. This movement is divided into the coal and metal mining branches. The work of the metal mining branch is divided into eight committees, viz: underground transportation, drilling machines and drill steel, mechanical loading underground, mine timbers, steam shovel equipment, fire-fighting equipment, mine accounting and mine ventilation.

It is not the purpose or intention to agree upon or decide in favor of a single standard, because we all know that this would be impossible. It is the intention and purpose, however, to eliminate as many special features possible and to establish as few standards as will serve the purposes efficiently and economically. If this much can be accomplished, much money will be saved and the cost of production will be correspondingly decreased.



WM. B. DALY

I do not know whether the chairmen of the other committees have found what I may term alarming conditions in their work as I have found as chairman of the Committee on Underground Transportation. If they have, the necessity for this movement is apparent and there cannot be any argument against it.

The object of this committee is as follows:

1. To standardize on a general capacity car for all hand-tramming, together with gauge of track, grade of crosscut and drift, weight of rail, size of tramming drift in the clear, character and type of loading chute and chute door which will insure maximum safety and efficiency with economic operation.

2. To standardize on a general capacity car for all motor haulage, together with gauge of track, grade of crosscut and drift, weight of rail, size of motor drift in the clear, etc.

3. To standardize on weight of locomotives for different loads for electric, storage battery and compressed air haulage.

In order to ascertain the present methods, practices and equipment now in use in connection with underground transportation, the writer, as chairman of that committee, forwarded a questionnaire containing sixty-one (61) questions upon this subject to twelve of the most prominent mine managers, superintendents and mechanical engineers employed at some of the largest properties in the United States and Mexico. Answers to all of these questions were received from ten of these men and, in my judgment, they certainly prove the necessity of at least attempting to formulate a set of standards to be guided by in the future.

In nearly all instances, I believe that the present conditions have been inherited from preceeding managers and that it is not advisable to change the old order of things insofar as they affect the old workings, because the cost of making the change would be far greater than the savings which would result, but in all new work and in the opening of new properties, some definite standards which will be safe, efficient and economical should be established and followed.

I had the privilege a few years ago of visiting and inspecting a great many of the large metal mines in this country and Mexico, and, while doing so, I noticed the entire absence of any effort toward standardization. It is not my purpose to criticize the past or present in this respect, but to show the urgent necessity of interesting all operators of metal mines to get together on this most important subject so that some definite plan or plans can be formulated which will bring about a better understanding among mining men and the elimination of useless and unnecessary methods, practices and equipment.

The answers to the questions which I sent out reveal an alarming condition. For the purpose of impressing the matter more thoroughly upon the minds of metal mining men, I will give some of the most noticeable conditions as they exist at the present time, as follows:

Hand Tramming

1. Ten different types of cars.
2. Capacity of the different cars in use in cubic feet: 12, 14, 15, 16, 20, 22, 24, 30 and 40.
3. About 75 per cent of the cars are roller bearing, while the balance are of the old type.
4. In only one instance are guards provided on the cars to protect the hands and fingers of the trammers while pushing the car.
5. The different gauges of the tracks used, in inches, are: 18, 19¾, 20, 22 and 24.
6. The weight of rail used, in pounds: 12, 16 and 25.
7. Spacing of ties, in inches: 12, 15, 18, 20, 24, 30, 36 and 42, with the size of the ties as variable as the spacing.

*Chairman, Committee on Underground Transportation, Metal Mining Branch, Standardization Committee, American Mining Congress.

8. Per cent grade of the tracks: Level, .4, .41, .43, .5, .62, .65, .66, .75 and .83.

9. Dimensions of drift in the clear, in feet (first dimension is width and second dimension is height): 3½ x 7, 4 x 7, 4½ x 6½, 4½ x 7¼, 5 x 7, 5 x 8, 6 x 7, 6 x 8, 6½ x 7, 7 x 7 and 7½ x 7.

10. In no instance is the size and type of the loading chute the same and in some properties several different sizes and types are in use.

11. Clearance between top of car and chutes, in inches: 4, 6, 8, 10, 12, 13, 15 and 18.

12. The chute doors are constructed of wood, iron and wood, and iron, but in no instance are they similar.

Motor Haulage (Trolley Type)

1. Weights of motors, in pounds: 4,000, 5,000, 6,000, 7,000, 8,000, 9,000, 10,000, 10,500, 11,656, 12,000, 13,700, 14,000, 15,000, 16,280, 16,400 and 20,000.

2. Height of trolley wire from rail, in inches: 78, 81, 84, 87, 90, 94, 96 and 108.

3. In most cases the trolley wires are protected at the loading chutes, but in only a few instances are they protected in the drifts and crosscuts.

4. Type of trolley car is different in each case.

5. Capacity of trolley cars, in cubic feet: 14, 15, 16, 18, 19, 33, 38, 46, 65, 67, 70, 90, 108 and 200.

Storage Battery Locomotives

1. Weight of locomotives, in pounds: 5,000, 7,000, 8,000, 8,500, 9,000, 10,000 and 11,000.

2. The type of trolley car is different in each case.

3. Capacity of trolley cars, in cubic feet: 14, 16, 22, 33, 34, 51 and 67.

Other Conditions Connected with Motor Haulage

1. Gauge of track, in inches: 18, 19¾, 20 and 24.

2. Spacing of ties: 18, 20, 24, 32, 36, 42, 48 and 60.

3. Grade of track, in percent: .25, .32, .4, .43, .5, .52, .62, .66, .75 and .83.

4. In some cases signal systems are in use, while in most cases they are not.

5. Loading chutes are different in each case.

6. Clearance between top of cars and chutes, in inches: 4, 6, 8, 10, 12, 13, 13½, 15, 16 and 16½.

7. Type of chute doors are different in each instance.

It is not necessary to spend very much time in examining these conditions to come to the conclusion that some of these methods, practices and equipment are not proper ones. They cannot all be proper ones. Which ones are? Which ones are not? That is exactly the purpose of this movement. Honest and frank discussion, honest and frank tests upon a scientific and practical basis, honest and frank conclusions and decisions, and then honest and frank cooperation by all of the operators of the metal mines will solve the problem of standardization, which will carry with it a saving of a very large amount of money.

We all know that conditions in all mining districts, and in mines in the same district, are different, but we must admit that there is not enough variance to warrant the different methods, practices and equipment as shown above. The results here given are from only ten properties. If I had the same information from all of the operators in the United States, Mexico and Canada, I am afraid that the results would be astounding.

Let us now discuss hand tramming in a fair and honest manner. We find ten different types of cars. Is it not reasonable to assume that one, or two, or three of these types could be standardized, would cost a little less money to build than the others and would be just as serviceable and efficient? I think every mining man must agree to this.

A hand trammer is a human being—a one man power. It is true that some men are stronger and some are weaker, but the average, after all, is a one man power. If this is true, why should the capacity of the hand tramming cars vary as much as they do? Why should the trammers in one mine be pushing a car with only 12 cubic feet of ore in it, while trammers in other mines are pushing cars containing 14, 15, 16, 20, 22, 24, 30 and even 40 cubic feet of ore? Somebody's hand tramming is costing him a lot more per ton of ore trammed than it should. Different conditions in different mines should not make different conditions in trammers. What is the proper sized car for the average trammer to push comfortably and without overtaxing his physical strength? That is the purpose of this standardization movement. It is to ascertain just this kind of facts, and after they have been ascertained, to put them into practice generally.

Seventy-five percent of the cars are roller bearing, while the other 25 per cent are of the old type. It would be very much more efficient and more economical if all of them were roller bearing. If they were, 25 percent of the hand tramming in the mines covered by this questionnaire would be accomplished more economically and with less expenditure of human energy.

The different gauges of the tracks in use, in inches are: 18, 19¾, 20, 22 and 24. These differences are caused, no doubt, by the variance in the types and capacities of the cars. If one, two, or even three, types of cars with proper capacities were standardized, one preferably, it would remove this variance.

The weight of the rail used, in pounds is: 12, 16 and 25. With a standardized car, one weight of rail only would be necessary.

The spacing of the ties are: 12, 15, 18, 20, 24, 30, 36 and 42 inches apart. Even though they are using different types of cars with different capacities and with different sized rails, it seems to me that some mines are using too many ties, or it may be that some mines are not using enough. Which mine has the proper spacing?

The per cent of grade of the tracks is: Level, .4, .41, .43, .5, .62, .65, .66, .75 and .83. As a result, the trammers in one property with a level grade are expending an unnecessary amount of energy in pushing a loaded car out, while the trammers in the property that has a grade of .83 percent are expending an unusual amount of energy in pushing the empty car back. There must be a proper medium somewhere. What is it?

I could go on discussing the other conditions in like manner, particularly the different weights of the motors and the different capacities of the motor cars, which must have cost considerably more to build than the same number would cost in one, two or three standard sizes and the amount of extra money required to carry the extra parts in stock, but the space allowed for this paper will not permit.

As I stated before in this paper, it is not my purpose to criticize, but to show the urgent necessity of all of the metal mine operators getting together and discussing the different methods, practices and equipment in use in their mines, in order that some standard or standards can be worked out, agreed to and put into practice. I also stated that honest and frank discussion will go a long way toward solving this problem.

As chairman of the Committee on Underground Transportation, I encourage and invite discussions and criticisms of this paper and the matters contained herein, either by letter addressed to me personally or in papers to be published in The Mining Congress Journal.

SOFT COAL RESERVE OF 55 MILLION TONS ON FIRST OF APRIL IS FORECAST

COAL STOCK ESTIMATES, brought into emphasized importance by anticipation of conditions arising out of expiration of the coal wage agreements, forecast the probable above-ground soft coal supply of the country on April 1 at approximately 55,000,000 tons, a quantity capable theoretically of filling demands for approximately 45 days without replenishment by production. These unofficial figures are interesting when compared with the report of stocks January 1, issued by the Geological Survey and the Bureau of Census, placing the amount of coal on hand on that date at 47,000,000 tons, a reserve sufficient to last 41 days under prevailing rates of consumption. The Survey plans to issue a complete report on coal stocks on March 31.

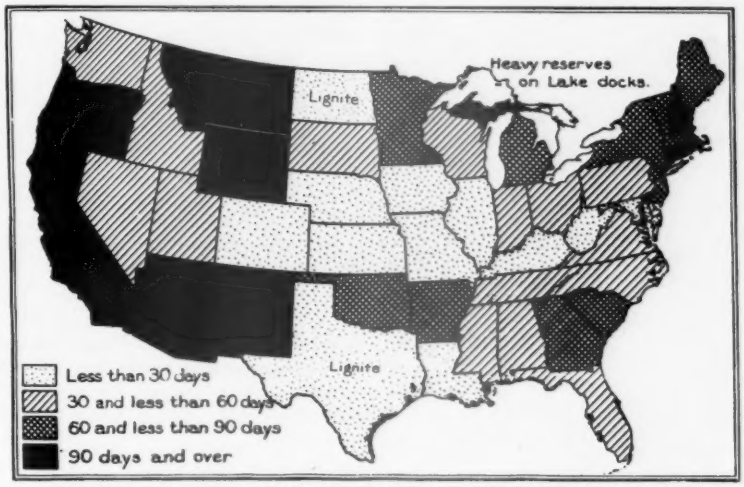
The forecast of stocks which will be on hand on April 1 takes largely into consideration a highly favorable response by consumers to the advice issued by government agencies that reserve stocks be increased to the limit in anticipation of the calling of a strike. Officials, in discussing this phase of the situation, declare that industrial plants should store at least a two-months' supply if they desire to be assured of operation.

With the non-union fields capable of producing 4,500,000 tons weekly at the beginning of a strike, and increasing this amount as time progresses to above 5,000,000 tons, it is estimated unofficially that eleven weeks could elapse following the calling of a strike before stocks would be deplenished to the 20,000,000-ton mark, which is the point at which experts declare the market becomes panicky. This estimate, of course, is predicated upon ability of the transportation system of the country to perform normally under the strain of having to make long hauls of coal from non-union fields to points of heavy industrial consumption.

Producers and consumers alike have been devoting much study to statistics recently issued by the Geological Survey, showing how the closing of union mines during the soft coal strike of 1919 affected production in the various fields throughout the country. Applying the 1919 rate of loss to the 1918 output, it is estimated that production of 414,625,000 tons was lost during the six weeks' period of the strike, with a maximum of 71.6 percent of the producing capacities of the fields considered as a whole closed during the strike. While some changes have occurred in the various fields as regards the union organization, it was stated that production by the following fields would be closed entirely in event of a strike: Northern Pennsylvania, Pittsburgh, Northern and Southern Ohio, Michigan, Southern Appalachian, Indiana, Illinois, Iowa, Arkansas, Oklahoma and Washington. The next highest percentages of effectiveness were in these fields: Central Pennsylvania (N. Y. C. and connections), the Missouri and Kansas district with 99 percent, and the Cumberland-Piedmont district with 98 percent.

The total commercial stock of bituminous coal on January 1, 1922, it is estimated, was 47,000,000 tons. This was 16,000,000 tons, or 25 percent less than the amount in storage at the end of the war.

In fact, the stocks were found to be slightly smaller than on November 1 last, when 48,000,000 tons were on hand. The public utilities and railroads, the report shows, have taken the precaution to increase their stocks during November and December, but their gains have been offset by a decrease in the stocks of industrial consumers and retail coal dealers.



SUPPLY OF SOFT COAL ON HAND AT INDUSTRIAL PLANTS ON JANUARY 1, 1922

At the rate of consumption prevailing in December, stocks at industrial plants other than steel and by-product coke would last, on the average, 51 days. How the supply varied from state to state is shown in the diagram. The darker the shading, the heavier are the stocks. If business should revive and consumption increase, the stocks expressed in day's supply would be smaller. Based by the Geological Survey on reports from 2,383 plants.

Production of anthracite in January was about 6,100,000 net tons, not enough to meet estimated current consumption. As a result, the reserve of anthracite in storage and in transit has probably decreased.

Concerning the amount of anthracite in the cellars of householders on January 1, no statistics are available. An opinion is widely held in the coal trade that domestic consumers have been slow to purchase, and, therefore, have less on hand than usual. The stocks in retail coal yards, however, are larger than usual. On January 1 a group of 841 dealers had enough to last 44 days at the rate their customers were asking for coal in December. In no state was the average less than 20 days. In New England it was 74 days. It should be remembered, however, that conditions in particular communities may be very different from the average.

The trend of stocks is suggested by the following table, which shows changes at a sampled list of dealers handling perhaps a fourth of the total business in domestic anthracite. It will be seen that after a temporary rise in December, the stocks turned downward, reaching, on January 1, a point 7 percent below the level of November 1.

On November 1, 1921, the date of the last stock report on anthracite, the storage yards of the anthracite producers were far from being filled to their capacity of nearly 7,000,000 tons, only 4,487,000 tons being reported on hand, of which 1,768,000 tons were domestic sizes

and 2,719,000 tons were steam sizes. Statistics of the quantity in stock on January 1 were not incorporated in the regular ninety days' report because of incomplete returns:

ESTIMATED TOTAL COMMERCIAL BITUMINOUS STOCKS IN THE UNITED STATES (a)

October 1, 1916	27,000,000
October 1, 1917	28,100,000
July 15, 1918	39,700,000
October 1, 1918	59,000,000
Day of the Armistice	63,000,000
January 1, 1919	57,900,000
April 1, 1919	40,400,000
March 1, 1920	24,000,000
June 1, 1920	20,000,000
January 1, 1921	45,800,000b
April 1, 1921	39,500,000b
August 1, 1921	41,100,000b
November 1, 1921	48,500,000b
January 1, 1922	47,500,000b

(a) Coal in transit and on Lake docks not included. The estimates here given are subject to a considerable margin of error. The figure for January 1, 1922, may lie anywhere between 44 and 50 million tons. (b) Subject to revision.

A further increase of 620,000 tons carried production of coal well above the 10,000,000-ton mark during the week ended February 11, according to the Geological Survey. The total output, including lignite and coal coked, is estimated at 10,326,000 tons, as against 9,706,000 in the week preceding. Except for the latter part of October, when consumers were stocking up in anticipation of a possible railroad strike, this was the largest output yet attained in the coal year 1921-22. This rate of production is sufficient to meet current consumption and exports, and also to increase the reserve in storage.

The total production of soft coal for the month of January, as indicated by revised figures of coal loaded by the railroads, was 37,600,000 net tons. This was an average of 1,447,000 tons per working day lower than in any January of the preceding nine years, the period over which records of monthly output extend. In January, 1915, the daily rate was 1,488,000 tons; in January, 1921, it was 1,610,000 tons.

Production of anthracite continued slowly to increase in the second week of February. From the fact that loadings on the principal anthracite-carrying roads totaled 34,842 cars, it is estimated that the output for the week approximated 1,822,000 net tons. This is still 226,000 tons short of that in the corresponding week, a year ago.

KANSAS COAL MINERS BEFORE SUPREME COURT WITH INDUSTRIAL CASE

THE SUPREME COURT, in taking up the appeal made by Alexander Howat and other coal mine labor leaders in Kansas from a decision by the Supreme Court of Kansas imposing penalty for violation of the Kansas Industrial Court Law—set the case upon its calendar for argument on February 27, when other related cases also were to be heard.

The labor leaders brought the case up from the lower court on the contention that the Kansas act violates the thirteenth and fourteenth amendments of the Constitution and that action thereunder by the state is invalid. They also contend that the provisions of the Court of Industrial Relations affecting coal mining with a public interest violates liberty of contract and due process of law.

The brief filed by counsel for the union men declares the act to be "arbitrary, oppressive, unreasonable and unjust," charging that it is vague, indefinite, an unlawful restraint on commerce, and that it is a denial of the republican form of government.

WORLD'S COAL PRODUCTION IN 1921 SHOWS HEAVY DECREASE

THE WORLD'S COAL production in 1921 dropped back to the level of 1909. From reports so far received the Geological Survey estimates the total output at approximately 1,100,000,000 metric tons. This figure is subject to material revision as more complete returns are available.

In comparison with the feverish year 1920, the year just closed shows a decrease of more than 200,000,000 tons, according to the Survey's report. The chief factors in the decrease were the British miners' strike which lasted from April to June, and—more important—a worldwide industrial depression. Prices collapsed early in the year, and the seaborne coal trade of the world fell off sharply. The consequent reduction in the volume of business offered to the shipping of the world has been an important element in the decline in ocean freight rates, so keenly felt by the American merchant marine.

Of the major coal-producing nations, France and Germany were the only ones to show an increase. Progress in restoring the ruined mines of France is indicated by the steady increase in output of the past three years. In 1919, 22,000,000 tons were produced; in 1920, 25,000,000; in 1921, approximately 29,000,000. A further increase of 12,000,000 tons, however, would be necessary to bring French production up to the level of 1913. German production of bituminous coal is also still far below the prewar level although an increase was effected in 1921 as against 1920. German production of lignite in 1921 reached the highest point ever attained. The estimated output of 120,000,000 tons is an increase of 33,000,000 tons over the last year before the war.

The proportion contributed by the United States was 40.9 percent, a larger share than in the years before the European war, but the smallest in any year since 1916.

The following table, prepared by W. L. Whiteside, of the Section of Foreign Mineral Reserves, presents the information received by the Geological Survey up to February 15, 1922. The tonnage of the countries not yet heard from ordinarily amounts to 12 or 15 percent of the total. Receipt of data for these missing countries, estimates for which are included in the total, may raise or lower the final figure by some millions of tons. The unit used is the metric ton of 2,205 pounds, the approximate equivalent of the long or gross ton.

Preliminary Estimate of the World's Production of Coal in Calendar Years 1919, 1920 and 1921

(In metric tons of 2,204.622 lbs.)

Country	1919	1920	1921
Australia	10,736,321	13,176,426	*
Belgium	18,342,950	22,388,770	21,807,160
British India	22,991,217	17,356,889	*
Canada	12,411,328	15,088,175	13,300,000
China	23,000,000	19,500,000	*
Czechoslovakia	26,946,813	31,086,479	*
France	22,341,000	25,300,000	29,000,000
Germany—Coal	†116,500,000	†140,757,433	†145,400,000
Lignite	93,800,000	111,634,000	120,000,000
Japan	31,461,386	29,245,384	*
Union of South Africa	9,313,232	11,181,846	‡9,400,000
United Kingdom	233,467,478	233,216,071	166,992,000
United States	502,534,410	586,000,000	448,600,000
Other countries	46,553,865	49,068,527	*
Totals	1,170,400,000	1,305,000,000	1,100,000,000

* Estimate included in total. † Includes Saar and Upper Silesia. ‡ Estimated from 11 months' production.

MINERAL TARIFFS AND MINING MEN

The following are excerpts from the statement made by Herbert Wilson Smith, chief of the Tariff Division of the American Mining Congress, at a recent meeting of the Mining and Metallurgical Society of America, which, through its New York chapter, has been engaged for some months in the drafting of a committee report on the subject of mineral reserves as related to the tariff question. The portions of Mr. Smith's statement here presented form the conclusion of his remarks, the main body of which appeared in the February issue of the MINING CONGRESS JOURNAL.

A MOST SERIOUS objection which has been raised is based on the dual problem of our foreign trade and our foreign debt.

We have become a great creditor nation. This is thrown at us as though it were an anathema, as though a curse. Do we wish to remain a creditor nation, or do we wish to sit on the fence and live off our fat while the world goes by? Are we going to come back to a level of prosperity with other nations by sinking to their level or by raising them to our own?

We are told that Europe cannot pay her debt to us unless she pays it in merchandise which we permit to be imported at low rates of duty or without duty. We are further told that we cannot develop foreign trade ourselves unless we permit free import of foreign goods. These statements are based primarily on the assumption that a protective tariff is a prohibitory tariff, but this is not the case. Since the beginning of the records of our customs house, since the beginning of our republic, the volume of imports from year to year has consistently increased regardless of whether our tariff was being levied on a protective basis or on a free trade basis, but, and here is the important difference, the nature of the articles imported has been radically different.

NO INTERNATIONAL BALANCE-SHEET

This statement is further predicated on the assumption that the nations from whom we buy are the nations to whom we sell and that there is an international balance sheet as between nations which is stricken off every year. This is not the case between nations any more than it is the case between individuals. There has been the further suggestion that these countries will levy retaliatory duties. One would think from such a suggestion that these countries have not already high protective tariffs, every one of them has, with the possible exception of Great Britain, and Great Britain, herself, is levying higher duties since the war than ever before. It is suggested that these countries against which duties will be levied on their production of minerals will levy retaliatory duties on the same materials from us. We import manganese from Brazil, but we do not ship manganese to Brazil. We import lead from Spain but we do not ship lead to Spain. In short, we do not import comparable materials or materials of a comparable character from the country to which we export the same materials. Finally there is the joint question of the development of foreign trade and the payment of the foreign debt. Let us take these up together. Where on the whole face of the earth have we tried the hardest to develop our foreign markets? In South America. Where have we failed most signally? In South America. Why have we failed there? Because Europe has held those markets in her grasp ever since they were developed.

Europe has held those markets because her business methods are more careful and painstaking, more leisurely than ours. The South Americans prefer them, but mainly Europe has held those markets because she has financed South America, and today there is owned in Europe enough bonds and similar forms of indebtedness, national, industrial, municipal, state, of South American countries to entirely pay the European indebtedness to the United States. Does Europe intend to pay us her indebtedness in that manner? Assuredly not. She wishes to continue to finance South America, to continue to hold South American trade and in this she is justified. That is good horse sense; but for the international bankers to tell us in the same breath that Europe cannot pay her debt to the United States unless she can have free trade and then to tell us that we cannot develop our own foreign markets unless we have free trade is surely blinding us to a set of facts with which the bankers, themselves, must be most familiar.

A MISLEADING CLASSIFICATION

The classification of the subject matter of the committee's report, itself, I think is capable of misinterpretation. This report is, as I understand it, intended to be transmitted to Congress, intended to be read by various Senators and Representatives to give them an idea of their course of action on these proposed mineral tariffs. You have grouped mineral industries into four classes. Under class D, which states that it is the class of which the United States lacks certain minerals almost entirely. Upon the cursory examination necessary to give such a report as this it would naturally devolve upon a Senator or Congressman to consider a tariff as levied on any article under this group as absolutely futile, and yet in this classification we find tin.

Now the tariff duty which is before Congress, which is requested on tin, is not requested on tin ore. It is requested on block and zinc tin. There sits on my left a gentleman who has invested a quarter of a million dollars in the tin smelting industry.

Surely it is not the purpose of your committee to suggest to Congress that his tin industry should not be protected. About five million dollars was invested in the smelting of tin during the progress of the war, bringing out an annual production of block tin from Bolivia and other foreign ores of approximately seventy-five million pounds per year. This is the only possible development of the tin industry that we can have—the development of the smelting industry here. The tariff which is requested is low, less than 10 percent ad valorem.

If I may be so bold as to suggest to the committee, I should suggest that the minerals and our mineral reserves be classified in their order of sufficiency of reserve as based upon annual consumption and that they bear indexed numbers ranging from 1 upwards—1 being the mineral which occurs in most abundance in proportion to consumption and the last on the list the least. This would give you a more elastic classification and a classification which would gradually run from one to the other. You could in turn reclassify this by brackets, giving certain broad groups. This would be what is termed a rainbow classification.

Finally, gentlemen, in adopting any policy of free trade as it relates to the mineral industry, what would we be doing? There has been much talk of the danger of building a Chinese tariff wall about this country. That is not the purpose of a protective tariff. We are going to have a protective tariff. Those of us who favor a gen-

eral protective tariff are glad of it. Those of us who do not favor it might as well face this fact, and if we draw a line around the mining industry and say this protective tariff shall not apply to the mining industry we are permitting the rest of the United States to benefit by whatever benefits are to be derived from the protective tariff and we are building this Chinese wall about our own industry—the mining industry. Can we justify this course to the men in the mining industry who have to employ the labor, who have to meet the payrolls?

It has been suggested that the policy of protective tariff on these mineral industries would be an experiment; admittedly so in a great many cases. We have been trying an experiment for a number of years, we have been trying the opposite experiment. We have been trying the experiment of free trade on the products of mineral industries. Has it developed these industries? Not at all. Let us therefore try a conservative experiment for a few years. Let us try an experiment that will bring revenue to the United States Treasury, both from import duties and from income taxation on growing industry within the United States. If the reserves are insufficient to support the industries, the industries will necessarily fall of their own weight.

We talk of this protective tariff as though it were a permanent thing. We talk of exhaustion of reserves. Sixteen, twenty-seven and forty-eight years have been mentioned as possibilities. We all know that the tariff bill now before Congress is not to endure any such length of time as that. Tariff bills endure four, eight or twelve years; very rarely longer than that. In this tariff act there is being built a platform on which the economic structure of our nation is to endure for this length of time. Let us join in seeing to it that no gap is left in this platform through which any worthy industry can fall to bankruptcy and destruction, and let us join in the principle that when the mineral reserves of any mineral industry are adequate to supply their proportionate part of the domestic consumption, that when the products of this mineral industry come in competition with the products of foreign mineral industries produced at foreign labor cost, that where such competition is destructive to the American enterprise that a protective tariff be levied to equalize this difference in labor cost and to permit the employment of American workmen at American scales of wages, by the American Mining Industry.

CERAMIC WORK OF BUREAU OF MINES WILL FEEL CUT IN FUNDS

BY REFUSING to appropriate $35,000 to the Bureau of Mines for non-metallic investigations, the House in passing the Interior Department appropriation bill placed a heavy handicap upon studies which the bureau is making for the ceramic industry with a view to effecting savings of large proportions in the burning of fuel.

While the bureau hopes to be able to continue some of the more important studies in this connection, it will be forced to forego the larger part of the program which it had planned to carry out in cooperation with the ceramic industry, provided the appropriation in question is not restored by the Senate.

A number of the bureau's experts have been working for some time at the Columbus, Ohio, station of the bureau in connection with the ceramics studies, and members of the industry already have benefited by the success of the experiments, which, in some cases, are reported to have enabled them to effect savings of one-third in their fuel consumption.

GREATLY INCREASED U. S. OIL PRODUCTION ESTABLISHES NEW RECORD

OIL PRODUCTION in the United States during 1921 reached a figure higher than that of any previous year, according to revised reports, the results of which have been summarized by the Geological Survey, showing an output for the year of 469,639,000 barrels, representing an estimated value at the wells of $753,300,000. These figures, which will be increased slightly when more complete data is compiled, represent an increase of 26,237,000 barrels over the 1920 production, and an increase of almost 100 percent over the 1912 output.

Imports of crude oil into the United States during 1921 amounted to 125,307,000 barrels as compared with 106,175,000 barrels in 1920 and with 52,822,000 barrels in 1919, these figures corresponding respectively to 27, 24, and 14 percent of the domestic production of the past three years. Exports of crude oil during 1921 amounted to 8,940,000 barrels and during 1920 to 8,757,000 barrels.

Estimated consumption (deliveries to consumers) of domestic and imported crude oil during 1921 amounted to 525,407,000 barrels as contrasted with 530,474,000 barrels in 1920. Consumption for the year just ended therefore amounted to 55,768,000 barrels more than the country produced.

Stocks of crude oil increased 60,599,000 barrels during the year, as follows: Net pipe-line and tank-farm stocks east of California 42,142,000 barrels gross pipeline and tank-farm and producers' stocks in California 12,359,000 barrels, and stocks of Mexican petroleum held in the United States by importers 6,098,000 barrels. On December 31, 1921, stocks of crude oil, exclusive of lease storage and of stocks at refineries, amounted to 183,890,000 barrels, equivalent to 119.3 days' supply at the current rate of consumption. On the last day of 1920 similar stocks amounted to 123,291,000 barrels, equivalent to 80 days' supply.

The year opened with record prices—$6.10 per barrel at the wells for Pennsylvania grade and $3.50 per barrel for Oklahoma-Kansas grade, which had held for several months in spite of rapidly increasing stocks. Shortly after the beginning of the year, however, prices began to fall, and within a few months Pennsylvania grade had declined to $2.25 a barrel and Oklahoma-Kansas grade to $1 a barrel. These low prices held until the rate of rapidly increasing stocks eased off somewhat in September and October, and the year closed with Pennsylvania grade at $4 and Oklahoma-Kansas grade at $2 a barrel. Low prices were reflected in a marked curtailment of field activity, and 15,012 producing oil wells are reported to have been completed during 1921 as contrasted with 24,222 in 1920. In spite of this, however, a number of important new pools were opened up, among which were Haynesville, La.; El Dorado, Ark.; Burbank, Okla., and Pierce Junction and Mexia, Tex., and extensive new developments were made in the Elk Hills and at Huntington Beach, Calif.

The strike in the oil fields of California naturally cut down the production of that state, which nevertheless produced a record output of approximately 114 million barrels. Oklahoma also established a new record, for almost 114 million barrels were reported as removed from producing properties. The relative standing of the two states can not be established until the final figures are received. Texas also produced more than 100 million barrels and in December, as a result of developments at Mexia, ranked first among the producing states.

QUALITY AND QUANTITY OF ALASKA'S COAL SOON TO BE DEFINITELY KNOWN

ALASKA'S COAL RESERVES, long the subject of doubts and conjectures, soon will be known for what they are worth. The Navy Department hopes to have sufficient data before July to ascertain the quantity and quality of these reserves, using the information as a basis upon which to build its future policies in connection with their development.

Practicality of coal from the Bering River field as fuel for the Navy's ships is to be determined in a test to be made July, 1922, when 600 tons of coal will be supplied from the Bering River field by the Bering River Coal Company for consumption in a naval vessel. A similar investigation, made in 1913, brought out the fact that the coal which was tested on board ship was so full of impurities and clinkered so badly that it was found unsuitable.

Since that time, however, additional beds have been discovered, and it is the opinion of Navy Department officials that the coal to be used in the new test, taken from the Carbon Creek beds, stands a good chance of measuring up to the required standards. Coal taken from the Matanuska field was proved by tests made in 1914 to be suitable for the needs of the Navy.

With diamond drilling operations in Coal Creek area of the Matanuska field scheduled to be concluded in April or May, the Department soon will be possessed of accurate data concerning the amount of coal which can be mined.

The Chickaloon field shows 300,000 tons of coal in sight, with the total amount available yet to be determined. It is estimated that the minimum figure at which the Coal Creek reserves can be placed is two million tons. The King River area includes three beds, ranging in thickness from two to seven feet. Anthracite Ridge contains one bed of anthracite 38 feet thick.

Once the practicality and extensiveness of Alaska's coal reserves are established, as officials of the department believe they will be, the next step will be to formulate a policy under which actual mining operations will be carried on.

With $1,300,000 already invested in development work, the Navy Department, despite its desire to keep out of the actual coal mining business, finds it advisable to thoroughly prove the field by development work before attempting to turn over the field to another department or to private parties.

Two plans have been broached by experts who have surveyed the situation. They are:

1. Leasing of the mines to private contractors, if practicable, with possible cheaper operation under private interests standing as a favorable factor.

2. Transfer of supervision of the entire project to another branch of the government, logically the Department of the Interior.

In this connection, Secretary Denby already is reported as having made representations to congressional leaders, suggesting that appropriations for further work on the coal fields in Alaska be turned over to the Interior Department instead of being given to the Navy Department.

Regardless of which plan is followed, the Navy Department heads are convinced that it is not a part of the work of that branch to conduct coal-mining activities, and that actual operations under control of another department or private capital should follow conclusion of the development work as quickly as possible.

It is declared, however, that the Navy's policy is one of "seeing the thing through," and the highest probability is that the department will continue to hold its supervision over the work until such time as economic conditions and industrial conditions in Alaska make it practicable for commercial operations to be undertaken by private capital.

Provided the Bering River coal is proved by the July tests to be of sufficiently high quality to command a place in the market, transportation costs will be the main obstacle which will have to be overcome. It is estimated that the cost of mining will be $5 a ton in the Coal Creek area of the Matanuska field and $7 a ton for Chickaloon coal.

Alaska coal will be able to compete successfully with coal coming from the Atlantic seaboard only if trade between the United States and the territory is worked up in such volume that return cargoes will be assured, thus reducing the transportation costs of the coal.

Since private interests hardly can be expected to take hold of operations in the Alaska fields until a reasonable assurance of profit is presented, it appears that the Navy must continue its present supervision for an appreciable period.

The often repeated plea that Alaska be released from the dictates of the ten governmental agencies which now exercise various authorities over the territory's natural resources and administration is given direct emphasis in semi-official discussions of the manner in which sufficient industry will be attracted to Alaska to render development.

The Navy Alaska Coal Commission is carrying out the original plan of Congress to determine definitely whether the Navy can depend on an independent supply of steaming coal in the Pacific, and this question is expected to be fully answered by this spring in the Matanuska field and summer in the Bering River field. If the trial tests of Bering River coal prove the coal of high enough quality for use in the Navy's ships, and, if it can be shown that the Navy possesses an independent supply of coal on the Pacific, experts point out that sufficient return for money spent for samples from the Bering field and development funds invested in the Matanuska field will have been secured.

Development work has brought to light the badly faulted and tilted conditions of the majority of beds which have been located. Despite the tendency of these conditions to increase mining costs, however, Navy Department officials state their confidence that the "performance on the grate" of the coal which is to be tested next July from the Bering River fields will disclose an additional tonnage to that already found to be suitable and available in the Matanuska field.

CORRECTIVE ACTION BY GOVERNMENT NEEDED TO FREE MINING INDUSTRY OF HANDICAPS

By McK. W. Kriegh

CHIEF AMONG the topics of the day are state taxes and freight rates. Farmers, miners, wage-earners, stockgrowers, merchants, manufacturers, lumbermen, and all other interests are greatly concerned over the growing burden of state taxes and the high level of railroad rates. While the widespread public demand has brought about economies in Federal expenditures and a reduction in taxes through the elimination of the excess profits tax, surtaxes above 50 percent, and certain luxury taxes, the revenue requirements and tax assessments of the several states have steadily increased. And, while all other lines of business and industry have been compelled to retrench and take losses on account of the depression following the war, the railroads of the country have been permitted to maintain an abnormally high level of rates, which, under the law, were supposed to produce a return of at least six percent on their investment.

The twenty thousand mineral producers in the United States are earning considerably less than six percent on their capital investment, and the stress of abnormal costs and subnormal prices has compelled many mines to close down, while many others are being operated at a loss in order to protect their investments until more favorable conditions will permit the resumption of normal production. If operating or production costs could be reduced to a level corresponding in some measure to the reduced level of prices, conditions would soon reach a normal adjustment; but the producers do not control the situation. Purchasers of mineral products and other commodities are not compelled to pay fixed prices such as the shippers of these commodities are compelled to pay the railroads for service. Therefore, shippers of mine products are forced to absorb excess costs, which cannot be passed on to the purchaser or consumer, by making drastic cuts in expenses such as salaries, wages and personnel, by reducing expenditures for prospecting, exploration, and development, and by extracting from their properties only high-grade ore. The result is that the large amount of ore that is left in the ground is lost forever—as a source of income to the investor, as a source of revenue to the state and nation, and as a source of tonnage to the railroads. Therefore, the government, the railroads, and the public, as well as the mine owners, are vitally affected by any maladjustment of overloading of the state tax burden or the cost of transportation.

The increase in Federal taxes was due to increased revenue requirements occasioned by the war; but there is no real justification for the enormous increase in state taxes. State taxes paid by the mining industry have advanced far more rapidly than their capital investment and net earnings, being four times greater in 1919 than in 1909, although during the same period the increase in capital investment was slightly more than double, with a corresponding increase in net earnings. The number of producing mining enterprises, including oil and gas companies, in 1909 was 19,915; in 1919, 21,280; capital investment, 1909, $3,380,525,841; 1919, $6,955,466,831; net earnings, 1909, $223,709,647; 1919, $501,842,678; state taxes, 1909, $17,246,763; 1919, $69,218,977; federal taxes, 1909, $500,000 (estimated); 1919, $75,998,714. The ratio of total taxes to net earnings in 1919 was 28.9 percent as compared with 7.8 percent in 1909. A table showing comparative statistics of capital, net earnings, and taxes of producing mining enterprises has been compiled for 26 states in which mineral production is an important industry, and appears with this article. Producing enterprises include all individuals, partnerships and corporations operating mines, oil and gas wells. Net earnings were determined by deducting from the gross value of production all principal expenses except taxes. Total taxes include both state and federal taxes. The remaining items of the table are self-explanatory.

—From the Kansas City Star

KER PLUNK

With every other basic industry and class of taxpayers, the mining industry shares the common burden. As taxpayers, all are in the same boat, and, because of the widespread interest in the subject, and in order to clarify much of the misapprehension which exists in the public mind, it is believed that each industry should publish the facts concerning its own taxes. The publication of such facts also would be of great value to all who are seeking an intelligent and constructive solution of the problem of taxation, as no program or policy can be equitably or effectively carried out without cooperation and without having at hand complete and adequate data upon which to act.

Of no less importance is the question of railroad rates. Raw mine products have provided more than 35 percent of the aggregate freight tonnage of all class 1 carriers in the United States during the past ten years. The products of metal mines have furnished a large portion of this traffic. In 1911, ore traffic furnished 17.5 percent of the aggregate freight tonnage of all class 1 carriers in the western district as compared with less than 8 percent in 1921. This alarming decrease in the volume of ore traffic on the rail lines serving the sparsely

COMPARATIVE MINE TAX STATISTICS

(26 States)

Showing Number of Producing Enterprises, Capital Investment, Net Value of Production, Total State and Federal Taxes, Per Cent of Increase in Taxes During the Ten Year Period, 1909–1919, and Ratio of Taxes to Net Profits, Years 1919 and 1909[1]

States	Producing Enterprises		Capital		Net Value of production after deducting principal expenses except taxes		Total Taxes (State & Federal)		Per cent of increase in taxes	Ratio of taxes to net earnings	
	1919	1909	1919	1909	1919	1909	1919	1909	1919–1909	1919	1909
Alabama	264	177	$84,167,016	$85,081,804	$8,235,119	$3,639,180	$1,699,630	$185,350	817.0	20.6	5.1
Arizona	155	135	402,419,671	119,772,781	35,801,345	6,915,726	7,752,423	431,829	1695.1	21.4	6.2
Arkansas	126	96	8,688,453	7,200,417	1,026,073	520,859	174,443	18,084	864.6	17.0	3.5
California	725	1329	446,782,385	235,577,552	74,825,911	13,049,943	10,026,745	576,946	1637.9	14.7	4.4
Colorado	477	672	147,154,642	144,639,558	6,385,785	8,744,575	1,136,752	542,972	109.4	17.9	6.2
Idaho	82	174	71,093,746	48,892,888	4,184,551	−385,407	649,069	164,935	293.5	15.5	*
Illinois	772	915	231,836,571	116,959,707	32,717,184	11,310,467	6,890,455	287,469	2297.0	21.1	2.5
Indiana	503	1010	63,198,281	59,764,947	8,855,361	2,760,616	1,590,853	176,369	802.0	18.0	6.4
Kansas	814	643	255,935,807	41,797,329	12,678,086	14,030,077	2,273,748	147,570	1440.8	17.9	1.1
Kentucky	938	437	201,247,725	26,786,640	14,363,623	1,159,136	2,605,300	96,122	2661.6	18.1	8.3
Michigan	122	83	283,528,279	119,331,987	18,805,221	19,367,476	6,275,133	1,948,756	222.2	33.4	10.1
Minnesota	135	153	310,095,559	176,950,369	60,028,088	23,538,584	26,074,651	2,824,161	823.3	43.4	12.0
Missouri	468	1021	47,926,850	60,549,081	6,709,109	5,460,307	2,071,467	138,086	1210.3	30.9	2.9
Montana	259	373	209,286,955	145,135,510	8,439,244	9,974,735	1,018,265	453,386	124.6	12.1	4.5
New Jersey	97	131	16,905,356	8,613,663	−59,489	4,143,448	371,765	47,354	685.1	*	1.1
New Mexico	85	98	93,994,713	40,125,674	1,863,983	393,154	835,920	40,410	1969.1	44.8	10.3
New York	700	1351	95,446,438	45,171,232	5,943,048	4,393,295	804,416	173,989	362.3	13.5	4.0
Nevada	203	266	82,500,057	120,002,830	2,073,109	9,700,910	462,663	243,129	90.3	22.3	2.5
Ohio	2283	1876	256,057,996	161,324,529	34,756,501	14,955,947	4,028,789	856,766	379.2	11.6	5.7
Oklahoma	1934	865	740,757,178	70,696,411	172,927,569	6,186,684	10,338,243	308,216	3221.1	6.0	4.9
Pennsylvania	5807	4851	1,317,519,289	866,207,208	152,570,385	62,475,981	28,747,401	5,699,466	404.4	18.8	9.3
Tennessee	205	216	51,466,346	33,819,977	2,785,462	1,415,260	608,005	94,575	542.9	21.8	6.6
Texas	624	236	361,684,392	19,575,969	23,103,173	3,043,979	4,045,981	62,333	6230.5	17.9	2.0
Utah	141	188	178,521,276	81,000,043	11,714,682	6,460,484	2,065,154	211,920	874.5	17.6	3.3
West Virginia	1714	798	553,138,835	219,466,909	88,818,853	11,461,971	11,078,927	965,443	1047.5	18.5	8.4
Wyoming	106	66	101,774,873	9,505,365	15,514,661	1,926,837	1,996,372	61,409	3150.9	12.8	3.2

[1] Source: U. S. Bureau of Census Reports. Minus sign, −, denotes loss. Asterisk, *, denotes no net profits.—Prepared by Tax Division, American Mining Congress

settled territory of the west, is responsible in a very large measure for the present financial condition of the carriers in that district. The decrease in ore traffic on all lines in the United States has been noticeable in the carriers' reports to the Interstate Commerce Commission. Each time the carriers have advanced the rates on raw mine products during the past few years there has followed a marked decrease in the number of active mine operators, particularly in the case of metal mines. For example, in 1916, there were 5,258 active operators of metal mines; in 1917, 4,637; in 1918, 3,636; in 1919, 3,383; and in 1920 it is estimated that there were less than 3,000. This situation cannot be attributed entirely to war conditions and the depression following the war, as it will be noted that the decrease was gradual and took place during years in which large rate advances became effective. It cannot be attributed to exhaustion of the mines, for the known mineral resources of the country were never greater than now, or the number of proved mines more numerous. The same situation exists with respect to quarrying operations, which have shown a steady decline since 1911. In 1911 there were 3,920 active quarry operators as compared with 1,724 in 1919. Quarries farthest distant from the markets have been unable to compete with those more conveniently located on account of prohibitive rates.

When mines are producing, the carriers haul freight both ways—ore is hauled out and supplies are hauled in. When the mines are closed or where they are compelled to resort to selective mining in order to break even, the carriers are forced to impose higher rates upon other classes of freight traffic to make up for the loss of revenue from ore traffic, and shippers located in sparsely settled agricultural and stockraising sections of the west suffer, as well as all other shippers located along the lines of the ore carriers. The volume of ore traffic will determine whether these carriers are to operate at a profit or a loss; and rates should, therefore, be reduced to a level where a larger ore tonnage will move.

Railroad rates and state and local taxes have a vital bearing upon the operation of mines. If profits from mining are absorbed in transportation costs, the Federal Government gets no revenue from the mines. Likewise, if profits are absorbed by state taxes, the Federal Government derives no revenue. If state taxes, or railroad rates, or both together, are so high that mines cannot be operated profitably under prevailing market conditions, then the Federal Government, the states and the railroads all lose revenue. However, the states enjoy one advantage not enjoyed by the railroads or the Federal Government. They can force the mines to pay taxes all the time whether operating or not; whether producing at a profit or a loss. The railroads can increase their rates, after securing Federal authority, but increased rates do not increase revenue unless the traffic moves under them. The Federal Government can raise the normal tax rate or surtaxes, but these will yield no revenue unless there are net profits upon which to levy an assessment. The states can continue to increase their revenue requirements, assessed valuations, and tax rates, but the tax base ultimately will disappear, in many cases, if capital is thereby driven into other states and other investments. Thus, the Federal Government, through its rate-making authority, the Interstate Commerce Commission, has the power to adjust transportation costs to a lower level where ore traffic, as well as other freight, will move more freely, and the various state legislatures and state tax commissions, which, respectively, enact and administer state tax laws, have it within their power to stimulate or destroy a continuing source of revenue, to encourage or prevent the growth and expansion of one of the nation's most important industries, simply by reducing or increasing the burden of taxation.

These facts demonstrate that there is a community of interest between all classes of the electorate in respect to matters of taxation and transportation; and farmers, wage-earners, miners, merchants, stockgrowers, manufacturers, lumbermen, and all other interests should act in harmony and cooperation to check the rising tide of state taxation and to secure relief from the burden of excessive railroad rates.

NEW TAX COMMITTEE MEMBERS

R. C. ALLEN, of Cleveland, Ohio, vice president of the Lake Superior Iron Ore Association, who for many years has been prominently identified with taxation problems of metal mines, and J. C. Dick, of Salt Lake City, Utah, formerly chief of the Division of Natural Resources, Bureau of Internal Revenue, have accepted appointment as members of the American Mining Congress special committee on state taxation.

The state tax authorities of 26 states have furnished reports and data for the use of the committee and have offered their cooperation in making the work of the committee a success. Members of the state units are engaged in the preparation of their reports—presenting the viewpoint of the mine operators. The investigation already has shown that there is no uniformity or relationship between the rates and methods of taxation in the different states, and that the differentials in the ratios of taxes to net earnings impose a hardship upon the mines of some states as compared with others more favorably situated.

IMPROVED ZINC RECOVERY IS SURVEY'S OBJECT

IMPROVED RECOVERY of zinc in the mills of the tri-state district of Missouri, Oklahoma, and Kansas is the object of a complete survey of milling problems encountered in that region, under plans which have been formulated.

At a conference held in St. Louis between representatives of the Bureau of Mines and operators of the Mississippi Valley lead and zinc fields for the purpose of formulating a detailed program for the Mississippi Valley Experiment Station, it was brought to the attention of the bureau that zinc was being encountered in increasing amounts in the fluorspar ores of Southern Illinois and Kentucky. The ordinary treatment by jig and table concentration results in a considerable loss of fluorspar, and zinc cannot be removed by this method because the zinc and the fluorspar differ so little in specific gravity.

The bureau then laid plans for investigations of methods for the electrothermic metallurgy of zinc, and their possible application in the United States, with a view to increasing the recovery of metal and lowering the cost of production, which with the standard retort process is so high that it endangers the position of zinc as a cheap metal.

F. McN. HAMILTON
Vice-President American Mining Congress
State of California

PLACED AS executive head of the mining industry in California through his position as state mineralogist, which he has held since 1913, Mr. Hamilton has to his credit a record of real service to the mining industry of his state. Under his supervision the bureau has grown from a small organization with hardly more than nominal activities until it now is a clearing house for information, not only for the mining public of the Pacific Coast, but for consumers and capitalists seeking investments throughout the United States and in foreign countries.

After graduating in 1904 from the College of Mines, University of California, Mr. Hamilton followed the profession of mining engineer and operated mines in California, Montana, Nevada and Mexico until his appointment as state mineralogist of California.

Since his first entrance into the position of official head of the mineral industry in California Mr. Hamilton's activities, aside from his duties at the Mining Bureau, have included service as member of the Explosives Regulation Committee during the war; Consulting Engineer for the United States Bureau of Mines; chairman of the Gold Producers' Executive Committee of California, and member International Jury of Awards at P. P. I. E.

He has been active in the work of The American Mining Congress for several years, and is a member of the American Institute of Mining and Metallurgical Engineers; the Association of State Geologists; California Metal Producers Association.

ROBERT M. BETTS
Vice-President American Mining Congress
State of Oregon

BROAD EXPERIENCE gained through direction of numerous extensive mining developments and operations has come to Mr. Betts during the score and more of years in which he has been connected with the industry. Since 1916, he has been Commissioner of the Oregon Bureau of Mines.

Mr. Betts has been connected since 1909 with the Cornucopia Mining Company, operating the Union and Last Chance mines, and now is manager of that enterprise, for which he enlarged old operations at Cornucopia several years ago and developed the Last Chance property in the same district.

Camps in British Colombia and central Idaho furnished him with his first experience in active mining operations. Later he was with the Bunker Hills and Sullivan Company, at Kellogg, Idaho, after which he engaged in field work at Cobalt, Ontaria, being associated with the Curlake Mining Company just before he returned to Washington and took charge of the Cornucopia operations.

His close associates credit his outstanding record to an alertness and perception of conditions, which qualities have enabled him to gain the most from his intimate knowledge of the intricacies of mining development.

JOHN M. WHITEHEAD
Vice-President American Mining Congress
State of Wisconsin

MR. WHITEHEAD has been closely associated with the mining industry for a number of years, and has served on the boards of directors of several mining enterprises. He now is vice-president of the Hillsboro Coal Company, and manager of the Ophir Loop mine, a large property located in Southwestern Colorado, the development of which is making good progress under his supervision.

Mr. Whitehead is a notable figure in public life in Wisconsin, having served four terms in the state senate, 1896-1912. He has served as the head of state branches of many national organizations, his selection for these posts coming in recognition of his outstanding talents as an executive.

While a large portion of his interests in the past have been centered in the mining industry, and these will increase when developments in which he is now concerned reach the productive stage, he has earned a notable reputation as a lawyer and economist.

The close contact he holds with the needs of the mining industry make him a valuable asset to its success, his broad vision amplifying this success largely.

LEE LONG
Vice-President American Mining Congress
State of Virginia

MR. LONG, who is vice-president in charge of operations of the Clinchfield Coal Corporation, which operate ten mines with an annual capacity of 3,000,000 tons high grade bituminous coal, is recognized as one of the notable figures of the coal industry and an authority upon subjects relating to industrial economics generally. Acknowledgement of his abilities as an observer and student of industrial conditions and problems is embodied in his appointment by Governor Stuart of Virginia in 1917 to membership on the Workmen's Compensation Commission, to assist in framing the workmen's compensation law for the State of Virginia, which now is in effect. Mr. Long also was a member of the Hampton Roads Port Commission, appointed by Governor Davis, which was charged with the duty of making recommendations to the General Assembly of Virginia for the improvement and development of the Port of Hampton Roads, a project of high interest to the coal industry.

He holds a long and enviable record in connection with the development and operation of coal mines in West Virginia and Virginia. In 1901 he organized the Imperial Colliery Company to carry on the enterprise, being elected general manager of the company and serving for five years in that position. After disposing of this property, upon which three producing mines had been opened, he organized and for five years was general manager of the Keeneys Creek Colliery Company, since which time he has been associated with the Clinchfield Corporation.

REPRESENTATIVE MANUFACTURERS UNITE TO FORM DIVISION OF MINING CONGRESS

AN IMPORTANT STEP was taken in Chicago on January 19 in connection with the further development of the Annual Expositions of Mines and Mine Equipment of the American Mining Congress by the formation of a Manufacturers' Division.

The success of the National Exposition of Mines and Mine Equipment held in Chicago last October led to the desire on the part of a number of the exhibitors to create a permanent body which would continue to develop these expositions along lines which would enable the exhibitors to derive the fullest possible benefits from these annual meetings.

The formation of the Manufacturers' Division creates the proper medium by which these expositions can be developed in a way which will make possible the fullest use of the opportunities which they afford and will give them a stability and an influence which will be steadily extended.

Industrial expositions of this character when wisely managed are universally recognized as an effective and economical medium for advertising manufactured products and for the development of contacts between the users and producers of equipment and machinery which are of great mutual benefit.

Mine operators are studying with the greatest care all types of mine equipment and machinery, for such equipment is an essential and vital factor in the reduction of operating costs. Practical operating officials look forward to these expositions as the place where they can study and compare the various types of equipment, as well as the latest improvements in mine machinery; while, on the other hand, the manufacturers exhibiting at these expositions have the opportunity of meeting hundreds of potential purchasers, operating officials and mine executives, and of showing their products under favorable conditions. These annual expositions have become, therefore, an important factor in the development of sales and advertising campaigns.

Aside from the definite material benefits derived from these great national meetings, they also perform an important function by focusing the public attention on the problems of the mining industry by stimulating interest, and they are, therefore, of great educational value. Cooperation is the key to success, and these expositions are essentially cooperative enterprises which must be developed along cooperative lines in order to be of the greatest mutual benefit.

The Manufacturers' Division of the American Mining Congress furnishes the medium by which these meetings can be most effectively developed, for it creates a permanent organization made up of manufacturers of mine equipment and mine machinery working together in the further development of their mutual interest.

General Advantages of a Permanent Organization

The creation of this Manufacturers' Division gives a permanent character to these annual expositions which could not otherwise be obtained and should greatly increase the influence and significance of these meetings. The success of such industrial expositions is largely measured by the attendance of operating officials, mine managers and other mine executives who are charged with the responsibilities of the effective development of mining enterprises. The membership of the Manufacturers' Division of the American Mining Congress has a large clientele among such officials and the cooperative effort which the Manufacturers' Division makes possible will do much to increase the attendance of this character, give these meetings a wider publicity and greatly increase their national importance.

The form of the organization of the Manufacturers' Division of the American Mining Congress is simple and yet effective. The Manufacturers' Division consists of manufacturers and dealers in mine supplies, equipment and machinery and such other organizations interested in the mining industry which may be acceptable to the Board of Directors. The total membership is limited to two hundred firms.

The Board of Directors of the Manufacturers' Division of the American Mining Congress is created. Thirteen members of the Board will be elected from the representatives of the manufacturing concerns, members of the Division. The other two members of the Board—the Secretary of the American Mining Congress and the Convention and Exposition Manager—will serve ex-officio.

The membership fees subscribed by the members of the Manufacturers' Division represent a pooling of the interests of the manufacturers interested in these expositions and will be utilized as a permanent underwriting fund to carry on exclusively the work of developing these expositions in such a way as to secure the greatest results and benefits.

The permanent Board of Directors will be elected as soon as a total of fifty members has been secured. Practically thirty-five concerns have already expressed their readiness to participate in this Division, which was enthusiastically approved and its by-laws adopted at a meeting of twenty-five representatives of manufacturing concerns at the Chicago meeting.

At Chicago a temporary Board of Directors, consisting of W. C. Doering, vice president of the Southern Wheel Company, St. Louis, Mo.; J. C. Wilson, manager of the mine material department of the Ohio Brass Company, Mansfield, Ohio; C. W. Chappelle, district sales manager of the Ironton Engine Company, Chicago, Ill.; William Whaley, general manager of Myers-Whaley Company, Knoxville, Tenn.; Joseph Teipel, assistant general manager of the Mancha Storage Battery Locomotive Company, St. Louis, Mo., and J. F. Callbreath, secretary of the American Mining Congress, and E. C. Porter, Convention and Exposition Manager of the American Mining Congress, was elected to serve until their successors could be duly qualified and elected.

W. C. Doering, vice president of the Southern Wheel Company, was elected Chairman of the temporary Board of Directors, and J. C. Wilson, C. W. Chappelle and William Whaley were elected as the three Vice Chairmen.

The following firms were represented at the organization meeting of this Division:

Hercules Powder Co., Wilmington, Del.
Hyatt Roller Bearing Co., New York City.
Timken Roller Bearing Co., Columbus, Ohio.
Ludlow-Saylor Co., St. Louis, Mo.
Streeter-Amet Recording Co., Chicago, Ill.
Mine Safety Appliances Co., Pittsburgh, Pa.
Roberts & Schaefer Co., Chicago, Ill.
Jacobson & Schraeder, Chicago, Ill.
Keystone Consolidated Publishing Co., Pittsburgh.
Tool Steel Gear & Pinion Co., Cincinnati, Ohio.
Taylor-Wharton Iron & Steel Co., New York City.

Edison Storage Battery Co., East Orange, N. J.
Dings Magnetic Separator Co., Milwaukee, Wis.
James H. Channon Mfg. Co., Chicago, Ill.
George D. Whitcomb Co., Rochelle, Ill.
Electric Service Supplies Co., Chicago, Ill.
Southern Wheel Company, St. Louis, Mo.
Ohio Brass Co., Mansfield, Ohio.
Ironton Engine Co., Ironton, Ohio.
Mancha Storage Battery Locomotive Co., St. Louis, Mo.

In addition to these firms, a number of applications for membership have already been received from other representative concerns, and the plan for this Manufacturers' Division has met with the cordial approval of those to whom it has been presented.

Among the firms not represented at Chicago which have formally approved of this plan are the following:

Hockensmith Wheel & Mine Car Co., Penn Station, Pa.
Keystone Lubricating Co., Philadelphia, Pa.
Fairmont Mining Machinery Co., Fairmont, W. Va.
Automatic Reclosing Circuit Breaker Co., Columbus, Ohio.
Robt. Holmes & Bros., Inc., Danville, Ill.
Myers-Whaley Co., Knoxville, Tenn.

Plans for the Cleveland exposition of the American Mining Congress to be held October 9 to 14 are moving forward satisfactorily, and, by the creation of the Manufacturers' Division, and with the cooperation of the members, it is expected that this meeting will present an even larger, more comprehensive and more significant display of mine equipment and mine machinery than the interesting exposition held in Chicago last fall.

BOARD FAVORS GOLD STANDARD

THE GOLD STANDARD is strongly urged by the Federal Reserve Board in a report discussing the general European situation. It is stated that the Genoa conference discussion is likely to relate in no small measure to the restoration of the gold standard or development of plans for stabilization of foreign exchange. The Board says there is a gratifying unanimity of opinion among leading economists, financiers and statesmen that permanent rehabilitation of credit and currency necessitates a return to the gold basis. Reinstatement of the gold standard, however, involved solution of complex problems, including reparation payments and domestic and foreign debts and until international agreement is reached based upon refunding of debts and balancing of budgets, with stoppage of inflation, no program involving return of gold standard will succeed.

Comptroller of the Currency Crissinger favors a universal gold standard. He says the world was on the point of establishing the gold monetary standard as the universal system when the war broke out. The chaos of inflated paper, over-extended credits, and national debts has caused the gold basis of value to be lost sight of. The consolidated credit and gold resources of the world are ample to sustain a gold monetary system through which international commerce can be placed on a basis of security within a reasonable time. Mr. Crissinger declares it is not only possible for the U. S. to bring forward proposals looking to reestablishment of the gold standard but that it is the duty of this country to take the lead because we have practically a monopoly of the world's monetary gold, 40 percent of the world's gold stock, and that we should begin redistribution of this gold throughout the world so that it will be restored to its proper function of maintaining a sound relationship between currency systems and the metallic standard.

OIL SHALE INDUSTRY REVIEWED

VICTOR C. ALDERSON, president of the Colorado School of Mines, and chairman of the oil shale section of the American Mining Congress, has just completed an interesting résumé of the oil shale industry for 1921.

"A comprehensive and world-wide view of the situation suggests a few striking facts," says Dr. Alderson. "They are:

1. The supply of well petroleum cannot be depended upon to supply indefinitely the needs of industry and advancing civilization for oil and its derivatives.

2. The oil shale deposits throughout the world are virtually inexhaustible and supply a "second line of oil defence" as it were.

3. The main problems to be solved are:

   a. The perfection of a retort of large capacity, foolproof in operation, and designed on correct scientific and practical principles, that will produce the maximum amount of good oil.

   b. The refining of the crude shale oil, not into a long list of chemical curiosities, but into a few standard products for which there is a steady market.

   c. The coordination of the various elements so that as a business project the whole will be an economic success, and

   d. Large capital and capable technical men.

4. There is a world-wide interest in oil shale—financial, economic, technical, chemical, and practical—that augurs well for its early development into an important factor in the economic advancement of the entire world."

Citing the Oil Shale Conference, held in Chicago in connection with the annual convention of the American Mining Congress, as the most important event held by the year for the industry, he outlines oil shale developments in both domestic and foreign fields, gives figures on oil shale potentiality, and includes several quotations of authorities, giving viewpoints concerning the future of the well oil industry, which the shale oil operations are primarily intended to supplement. An oil shale bibliography of recent articles also is included.

NEW OIL REGULATIONS

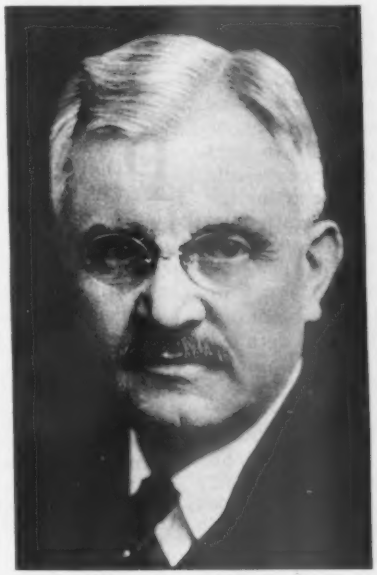
THE INTERIOR DEPARTMENT has issued instructions under the act of January 11 authorizing extension of time under oil and gas permits. They provide that a permittee who has been unable with the exercise of diligence to comply with terms of the permit may if the facts warrant be granted an extension of time upon filing an application in the General Land Office or in the Local Land Office having jurisdiction over the land covered by the permit. Local Land Offices will forward these applications to the General Land Office. The permittee must file affidavit showing what effort he made to comply with the terms of the permit and the reason for delay in full compliance, together with a corroborating affidavit of one disinterested person having actual knowledge of the facts. The applicant's affidavit must also show the time when he proposes to resume operations and the arrangements he has made for complying with the permit.

PROPOSED MAPPING PROGRAM WOULD BENEFIT MINING INDUSTRY

TOPOGRAPHIC MAPPING of the United States, recognized by Congress more than a half century ago as essential to the industrial and commercial development of the country, and especially vital to mining activities, has never been adequately provided for. Today, although the government could secure, with the amount of money required for the building of one modern battleship, early completion of this important project, the work is proceeding slowly on account of insufficient appropriations. Only about 35 percent of the area of continental United States, exclusive of Alaska, has been accurately surveyed and mapped. The October, 1921, issue of the MINING CONGRESS JOURNAL contains an article describing the work of the Geological Survey in connection with the great topographic map of the United States, which, when completed, will be the largest map in the world. The delay in completing this work, due to small appropriations and lack of coordination between the various Federal map-making agencies, is retarding the industrial and commercial development of the country, particularly in the case of natural resources, to a very considerable extent.

THE TEMPLE BILL

In order to eliminate duplication of effort by the dozen or more mapping agencies operating under different departments of the Federal Government and topographic services of the various states, and to secure cooperation between these agencies as well as a uniform standard for surveys, Representative Henry W. Temple, Pennsylvania, during the special session of the present Congress introduced a bill known as H. R. 5230, which makes provision for the coordination of the work of governmental mapping agencies and the completion of the map within a period of twenty years. This bill is now pending before the Committee on Interstate and Foreign Commerce. It provides for the placing of funds in the hands of the President for allotment to such Federal organizations as are best equipped with personnel to economically and accurately carry out the program, and for cooperation with the various states in expediting the topographic mapping within their borders.



HENRY M. TEMPLE
Author of bill proposing coordination of governmental map-making

STANDARD MAP URGENTLY NEEDED

Owing to the lack of adequate topographic maps, the people of the United States are compelled to spend each year for private surveys a vast sum, estimated to be almost equal to the total cost of completing a standard topographic map by the government. Suitable maps must be prepared before any public utility can be constructed, any highway built, any watercourse developed, any transportation system extended, any power site utilized, any drainage work undertaken, any river or harbor improved, any new agricultural region opened, any mineral resource worked, any timber tract logged, or any reservation made subject to homestead entry. Such maps are necessary to insure economical planning of improvements or development work and frequently reveal possibilities for utilization of resources that otherwise would remain unknown.

AIDS TO DEVELOPMENT

All state geological surveys are interested in the completion of the topographic map. Geologists must have maps showing the configuration of the surface on which to plot the outcrops and bounds of subsurface formations; and the first step in determining the extent and availability of the mineral resources of a locality is to procure or have made a topographic map. At the present time the development of promising oil and coal fields in the western states is seriously retarded because geologic examinations cannot be undertaken until topographic maps covering these unsurveyed public lands are available. Among the areas for which no suitable topographic maps exist are the oil and gas fields in central, west central, and extreme southern Texas, and in southern Arkansas; the prospective oil fields in and near the Powder River Basin and in the region north and west of Rawlins in Wyoming; large areas in Montana which are considered favorable for oil; and the three most promising coal fields of the West—the Castlegate field in Utah and the Trinidad and Yampa fields in Colorado. Not only is there an urgent demand for more rapid progress in topographic mapping to meet the needs of the mining industry, but the engineering activities of all classes, as well as of the state and federal governments, are affected.

UNITED STATES LAX IN MAPPING

Maps of all the nations of Europe are available on several scales. The British Isles, France, Belgium, Germany, and Switzerland have accurate maps of their areas which are kept up to date, and mapping is one of their governmental functions. Canada, Japan, and several of the larger South American countries have adopted systematic mapping programs. The United States lags behind all of these countries, leading only China and Mexico in the work of surveying and mapping industrially important undeveloped areas. It should be kept in mind, however, that the areas of the European countries, Japan, and the South American republics, are relatively small as compared with the area of continental United States. Although a large part of the public land area of the states has been subdivided into sections, the surveys have been made for the single purpose of marking on the ground the boundaries of the public land divisions, so that their settlement could be accomplished. The township plats prepared from these surveys show no ground forms, elevations, or other features, such as woods, roads, buildings, etc., in their true

relationship, and therefore have no value as topographic maps.

The great military value of the topographic map now being made by the Geological Survey, the early completion of which is provided for in the Temple bill, has been recognized by the War Department, and has been adopted as the map for general use by the army. It is not generally known that in case of war, if this country were threatened with invasion, it would be necessary to expend immediately vast sums of money to secure adequate topographic maps for the use of the army in controlling troop movements. The orderly movement of armies cannot be accomplished satisfactorily without detailed information concerning the roads and the character of the country to be traversed. Accurate topographic maps are indispensable to the engineer, artillery, infantry, air service, supply service, intelligence staff, and other units of the army in their training and operations, and it is therefore essential that the mapping of our coastal and frontier areas be completed without delay even though the possibility for their use in defense against invasion seems remote.

Coordination Essential

The mapping activities of the Reclamation Service, Indian Service, National Park Service, Forest Service, Bureau of Public Roads, Bureau of Soils, Postoffice Department, Federal Power Commission, General Land Office, and different branches of the army should be coordinated so that the funds expended annually to meet their urgent individual needs would produce results which will measure up to the accuracy required for the standard topographic map in course of preparation by the Geological Survey. As the individual needs of many of these bureaus do not demand surveys which measure up to the specifications of the standard map, much of their work has no permanent value and must be duplicated. The air service should also be utilized, as detailed maps of level surfaces can be made from airplane photographs at a cost considerably less than the cost of covering the ground in the ordinary manner.

When the American Expeditionary Force began to function in France in 1917, it was found that an efficient topographic service was vitally necessary, and the United States Geological Survey was called upon to furnish the officer personnel which formed the nucleus of what became, before the end of hostilities, the greatest mapping organization the world has ever known. The field survey and reproduction work necessary to successful operations called for technical ability of the highest order and the Topographical Division during 1918, with its survey and drafting detachments and mobile and base printing plants, produced and distributed more than 6,000,000 topographical maps, without which the American army could not have functioned so efficiently. Many of the officers whose experience and skill contributed to the success of this branch of the activities and operations of the Expeditionary Force are still serving the government, and these are charged with the work of mapping the United States.

A Good Business Proposition

The Temple bill outlines a policy for the completion of the survey of every state within a reasonable time, at an annual cost of less than that of maintaining a single regiment of infantry, and at a total cost of not more than the price of one modern battleship. The completion of the topographical mapping of the United States is without doubt one of the best business propositions the Federal government can undertake, for it entails the expenditure of the people's money where it will be of greatest value to the country and where it will permanently benefit the greatest number of individuals.

ORGANIZATION OF SAFETY CHAPTERS TO BE EFFECTED

THE SECOND STEP in organization of local chapters of the Joseph A. Holmes Safety Association will be taken on March 6, when representatives of the twenty-five national associations, mostly technical in character, forming that body will meet in Washington to consider the report of the committee which has been drafting the plan under which the proposed organization is to be effected.

There are at the present time 100 scattered local safety organizations in as many mining camps throughout the country, which are to form the nucleus around which it is proposed to build in enlarging the scope and efficiency of the association. Several of these existing organizations already have asked those in charge for particulars under which they will be able to operate in conjunction with the national body.

The plan for local chapters now has the hearty endorsement of all concerned, both operators and miners finding in it a common plane upon which they can work out the most effective means of promoting safety in the operations in which they are engaged.

NAVY COAL PRICES ARE SUBJECTS OF COMPTROLLER GENERAL'S DECISION

PRICES OF COAL purchased by the Navy should have been decreased since January 1 by the amount of freight tax in effect previous to that time, according to a ruling made by the Comptroller General, at the request of the Navy Department, which holds that clauses in the contracts providing that prices be modified by changes in freight rates include taxes and all other items paid by the shippers to the roads as basis for modifications in the final price.

After repeal of the transportation tax in January, the Navy Department asked the contractors to state whether they would reduce the price of coal shipped after the first of the year by the amount of the repealed tax. A few contractors advised that they did not consider the tax as a part of "freight rates" and declined to make the requested reductions.

On the basis of facts in his possession, the Comptroller General has ruled that there is no authority for the Navy "to do other than pay that which will conserve the interest of the government" and that in payments on contracts for coal delivered after January 1, there should be withheld the amount of the repealed tax where same has not been deducted by the contractor from his price. The Comptroller qualifies his ruling by stating that it is not a final determination since he has not been given an opportunity to study the contracts, the findings merely being made upon the presentation of facts made by the Navy Department.

Cold Storage Data—Comprehensive information concerning coal storage problems and their means of solution is being obtained by the Bureau of Mines and the Fuel Division of the Bureau of Foreign and Domestic Commerce through answers to a questionnaire which has been circulated among large consumers of coal who have practical experience in storing coal. The work, which is under the immediate direction of F. R. Wadleigh, is expected to result in compilation of much valuable data leading to more economical and increased storage of coal.

INTERIOR DEPARTMENT APPROPRIATIONS TO FEEL EFFECT OF ECONOMY PROGRAM

RECOGNIZING branches of the government which deal with the mining industry as particularly efficient agencies and as organizations whose work invites to so large a degree the industrial welfare of the future, the House accepted the report of the committee on appropriations for the Interior Department carrying funds for these bureaus during the coming fiscal year, and passed the measure without change so far as its provisions for the Geological Survey and the Bureau of Mines are concerned. The administration's policy of economy, however, previously had caused the Bureau of the Budget to reduce the department's estimate appreciably.

In reporting the measure, the Senate Appropriations Committee made no changes in the money allotted the Bureau of Mines by the House. The committee's report showed increases in appropriations for the Geological Survey and the General Land Office for land surveys and classification.

The appropriations were handled this year under the newly innovated system which gives to each government department a separate bill and a separate subcommittee of the House appropriations committee to consider its finances.

The total appropriation authorized by the House for the Interior Department shows little variation from the committee's recommendation of $295,622,112, which, in keeping with the administration's policy of enforcing rigid economies, is $3,754,920 less than was recommended by the Bureau of the Budget, and a decrease of $19,573,037 from the amount appropriated for the department during the present fiscal year.

The bill, as passed by the House, gives the Geological Survey $1,325,940 to cover its expenses of the coming fiscal year, this being a decrease of $288,400 from the amount allotted for the present year, and $395,120 less than called for by the estimates of the Bureau of the Budget.

The Bureau of Mines is granted an appropriation of $1,580,900. This is an increase of $106,600 as compared with the sum allotted the bureau for the present year, and a decrease of $79,565 from the estimates submitted by the Bureau of the Budget.

Funds for specific activities of the Geological Survey are provided for as follows:

Topographic surveys, $275,000; geologic surveys, $300,000; chemical and physical researches, $40,000; report of mineral resources, $125,000; investigation of mineral resources of Alaska, $75,000; gauging streams, $180,000; classification of lands, $150,000; geological maps, $110,000; illustrations, $18,280. The appropriations for topographic and geologic surveys, geologic maps, and classification of lands all were decreased in sums ranging from $30,000 to $150,000 from the amounts allotted these activities during the present fiscal year.

Detailed appropriations for the Bureau of Mines are as follows:

Investigations of mine accidents, $378,000; operating mines rescue cars, $211,000; purchase and equipment of mine rescue cars, $75,000; testing fuel, $136,000; mineral mining investigations, $125,000; petroleum and natural gas investigations, $135,000; mining experiment stations, $170,000; buildings and grounds, Pittsburgh Experiment Station, $55,000; mining station and mine inspection in Alaska, $35,000; enforcement of the oil-leasing act, $155,000; purchase of land adjoining Pittsburgh Experiment Station, $28,000.

The appropriation for operations of mine-rescue was increased by $51,000 as compared with that of the present year, while similar increases were made of $27,000 for mine inspection in Alaska, and $23,000 for enforcement of the oil leasing act. The item of $75,000 is a new one this year, and shows a cut of $6,000 from the amount recommended by the Bureau of the Budget for this use. The appropriation for investigation of mine accidents is reduced by $31,000 from the amount given the bureau to cover the expenses of this item during the current year, and a similar reduction of $30,000 is made in the appropriations for the mining experiment stations.

Just before the House took its final vote on the bill a motion to recommit the measure to committee with the recommendation that the offices of the surveyors general of a number of western mining states be abolished. The appropriations committee made the recommendation, which was adopted by the House, that this office be abolished in the State of South Dakota. Representative Byrnes, South Carolina, then sought to have similar action taken on the corresponding offices in the states of Colorado, Wyoming, Washington and Oregon, on the ground that the work could be conducted by the field force of the general land office. A test vote on the issue as it affected the Colorado office showed the House as disposed to continue these offices, the vote being 21 for abolition and 41 for retention.

Representative French, Idaho, led the successful stand taken by several members of the House from western states. Representative Williamson failed in his efforts to have the House provide funds for the office of surveyor general in South Dakota, despite his statement that abolition of the office would cause inconvenience and delay in the surveying of mining claims, and that the post should be retained for at least another year.

The House adopted the committee recommendation for consolidation of the offices of register and receiver of 25 district land offices, and legislation restricting land offices, which Mr. French declared would result in the abolition of fifteen such offices by July. An amendment offered by Representative Hayden, Arizona, calling for an increase from $600,000 to $700,000 in the appropriation for public land surveys was defeated.

Chairman Rhodes, Missouri, of the House Mines and Mining Committee, in reviewing the work of those branches of the Department of the Interior which apply themselves to matters relating to the mining industry, indicated the necessity for a broader application by the government of its attention to these matters. "I cannot refrain," he said, "from calling attention to a larger question of which this is a part that I have in my mind. I hope the day will come—in fact, I trust it is now here—when Congress will expend larger sums of money in the publication of useful documents and scientific publications in relation to the various governmental activities connected with the mining industry.

"Mr. Chairman, do you realize that the mining industry in 1920 contributed twice as much tonnage to the railroads of this country as did agriculture, three times as much as animal industry, and twelve times as much as forestry? Exclusive of the value of bituminous coal, the mining products of the United States in 1920 exceeded $6,000,000,000, and yet today we have that great

department of the government, the Bureau of Mines, tucked away in a secondary cabinet office about which little is said and less is known."

Referring to the work done by the Bureau of Mines, Mr. French, in discussing the appropriations for that agency, called attention to the remarkable results in accident prevention and first aid work that have brought about a distinct decrease in the number of lives lost in the mining industry.

"You will find that the percentage of loss of life in the different mining activities of the country begins like a thick wedge about 11 years ago and that it continues down to the thin wedge it now forms," he said.

"In 1911 there were 15 major mine disasters, and in 1920 there were 8; in 1911 there were 413 killed in these disasters, and in 1920 only 61 were killed. The total killed in 1911 was 3,539; the total killed in 1920 was 2,809, or a saving of 730 human lives. Thus the wedge is growing thinner. We expended last year approximately $1,400,000 upon this bureau. If you will apply your arithmetic, you will find that the cost of saving of human life, if all the money spent for the bureau were for this purpose, amounts to $2,000 per individual. What is a human life worth? Surely, it is worth more than that, and if all the money we are appropriating for that one bureau could be utilized exclusively for the purpose of promoting safety in the mines of this country, there would be abundant justification for the maintenance of the work."

Rep. Cramton, Michigan, in charge of the Interior Department appropriation bill, told the House that Interior Department officials, especially Director Bain, of the Bureau of Mines, and Director Smith, of the Geological Survey, impressed the committee which drafted the measure most highly by their zeal, intelligence and efficient conduct of their bureaus. He hoped to see the department expanded and developed, and referred to its administration of a tremendous national estate of lands, forests, coal and oil, oil shale, phosphate, potash, water-power, etc., valued at $150,000,000,000, from which it was estimated the government would receive royalties amounting to $12,000,000,000. Receipts of the Reclamation Service from oil leases amounted to $4,617,665.

Mr. Cramton said the Geological Survey was a great service and had been remarkably well administered under Director Smith. He referred to the development of a potash field in Texas which would be of great value to the country. Reductions in estimates for the Survey had been made by the committee not because of lack of confidence or appreciation of the work but because some of its activities can be deferred.

COAL MINE ACCIDENTS SHOW DECREASE IN 1921

COAL MINE ACCIDENTS in the United States in 1921 resulted in a smaller loss of life than in any year since 1903, according to a report just compiled by the Federal Bureau of Mines. Information received from all state mine inspectors shows a total of 1,973 men killed, as compared with 2,271 in the preceding year, a reduction of 298 fatalities, or more than 13 percent.

The decrease was due largely to the fact that the bituminous mines were idle much of the year on account of the depressed condition of industry in general and the resulting lack of demand for coal. For every million tons of coal produced, the fatality rate for the past year was 3.99, while for 1920 it was 3.52. Paradoxical as it may seem, it is believed that the idleness of the mines during much of the year, while resulting in fewer lives being lost, nevertheless was partly responsible for the increased accident ratio on the basis of production.

NORTH DAKOTA LIGNITE REPORT

A NEW REPORT on the lignite of North Dakota, containing the results of studies made of the beds underlying the Fort Berthold Reservation, has just been issued by the Geological Survey. A conservative estimate of the amount of lignite in the part of the reservation that was examined is placed at 650,000,000 tons by experts of the Survey, with thickness of the beds ranging from two to fifteen feet.

The upland surface of western North Dakota is a rolling plain, in which Missouri River and its tributaries have cut rather narrow valleys from 300 to 400 feet in depth. The sides of these valleys—the bluffs, as they are usually called—are cut by many small streams, so that the slopes are made up entirely of steep-sided ravines, which are known locally as "The Breaks" and which form the badlands for which this region is famous. In these badlands the lignite beds are generally well exposed except where the lignite has been burned, so the geologists had little difficulty in tracing individual beds for long distances along the bluffs of Missouri River and its tributary streams. The beds were measured at many places and mapped instrumentally with fair accuracy. The outcrops of workable beds are shown on the maps accompanying the report, and many sections are given to show the thickness of the lignite beds.

The description of the lignite in the Fort Berthold Reservation is contained in Bulletin 726-D, a copy of which can be obtained free of charge from the Director, United States Geological Survey, Washington, D. C.

CONDITION OF FELDSPAR INDUSTRY OUTLINED

HANDICAPS under which the feldspar industry is suffering are pointed out in a report recently issued by the Bureau of Mines. Among the main factors which are named as operating against progress within the industry are the following: a lack of adequate engineering and chemical control over mines and mill; inefficient methods for mining and grinding; and lack of cooperation between producers, some of whom, the report asserts, are secretive.

It is said that the small size of many feldspar deposits precludes maintenance of an efficient organization at each mine, and that many of the best deposits situated close to railroads are becoming depleted, resulting in production of lower grades and increased cost for the higher grades.

LEASED LAND COAL PRODUCTION

FOUR MINES are now producing coal from leased government lands under the Leasing Act of February 25, 1920, according to the semi-annual report just submitted to Director H. Foster Bain of the Bureau of Mines by H. I. Smith, acting mining supervisor. Two of these mines are located in Wyoming and one each in Utah and Colorado.

According to this report, 31 prospecting permits for coal have been granted in Wyoming, 19 in Montana, 18 in Colorado, 10 in Oregon and smaller numbers in California, Idaho, Nevada, New Mexico, North and South Dakota, Utah and Washington. A total of 104 coal prospecting permits have been granted, in addition to which there have been granted nine leases and five licenses to individuals and associations of individuals. One phosphate prospecting lease has been granted in Idaho.

Woofing and Warping

IV. Representative Philip Pitt Campbell

A Series of Scrutinies Directed Toward Notable Legislative Personalities

By IRA L. SMITH

Philip Pitt Campbell

FRIGHT caused dry horses to prance around on their rear legs like so many members of the ballet. People peered cautiously into the street from behind drawn blinds. The town clock stopped dead in its tracks. Brood hens clucked their chicks to the safety of their wings. All this happened back in the eighties out in Kansas when Philip Pitt Campbell, now chairman of the House committee on rules, came breezing into the old home town fresh from law school and wearing the first plug hat and frock coat ever seen in those parts in his determination to attract attention and clients. His career, initiated it would seem through that bit of show-work, stands forth today as testimonial to the truth of that old gag that "it pays to advertise."

Although Phil no longer cavorts around in a two-gallon derby and swallow-tail coat, he possesses several natural characteristics that are unique enough to hold him out in bold relief from the more or less motley crew of Congressmen with the likes of whom he has been associating during a quarter of a century. Chief among these characteristics is his face, which seems to be a consolidation of the phizes of Henry Clay, Tommy Moore, Bobby Burns, Disraeli and other of the same general facial contour.

Because it makes him resemble Henry Clay he is said to be especially fond of the frolic of hair that wanders down over his forehead, standing like a hirsute plateau between two valleys of baldness.

Mr. Campbell is boss of the committee whose sole duties are to beat the rules of the House and hold stop-watches on Congressional tongues. If some unfortunate bill is given the air on the floor by being made the subject of a point of order, Phil's aggregation, by grinding out a rule, can bring it back in just two seconds longer than it takes to say Jack Robinson. During general debate the rules committee is in its hey-day, parceling out so many epithets and philippics, measured in minutes and hours, to either side. With talk standing high among the activities of members of the House, it easily can be seen that Phil Campbell, supreme custodian of precious speaking time on important subjects, cuts quite a figure on the legislative ice pond.

He is as conservative as an old man's shoe. Back behind the scenes where he performs most of his duties, good solid thinking commands as much of a premium as hip boots in Noah's time. Rarely does he speak at length on the floor, but when he does the customers in the galleries immediately take to figuring how he escaped the stage, what with his easy manner and well-modulated voice carrying words out of his mouth like bubbles on the breast of a drowsy brook.

He knows more about parliamentary procedure than a woman does about the affairs of her next door neighbor. There are those who say that they have seen him in the early morning standing on the plaza in front of the Capitol, petting and fondling his favorite rules of debate which have hastened to gather round him in answer to his beck and call just before the House goes into session to consider some highly complicated business.

I most certainly should like to see the expression which will adorn St. Peter's face when he sees standing before him the ghost of Disraeli, talking not in the manner of the great English premier, but announcing that the committee on rules wishes to recommend that the freedom of the golden city be granted to the man who most certainly "rules" the House during these present days.

HIGH RATES STIFLE ARIZONA'S MINING INDUSTRY

JAMES S. DOUGLAS, director of the American Mining Congress, and president of the United Verde Extension Mining Company, recently outlined the difficulties with which the mining industry of Arizona is being forced to cope as a result of the present high freight rates. In presenting the facts to the Industrial and Traffic Committee of the Los Angeles Chamber of Commerce, he said:

"If the United States of America has a serious regard for the revival of business and for the future of her mining and industrial activities, a complete readjustment of freight rates must be made at once.

"At present we are entitled to a $5 rate on unrefined copper from Arizona to Los Angeles harbor, and we are going after it if we have to carry the controversy to Washington."

In pointing out the reasonable character of the request, Mr. Douglass stated that before the war the rate to the eastern seaboard on copper was $12.50 a ton. Today it is $16.50 with copper at the bedrock price of 13 cents a pound.

He stated that unless the reduced rate is established the return of the mining industry of Arizona to normal conditions will be retarded indefinitely.

REOPENING OF GOLD MINES INVOLVES GAS DANGER

ACCUMULATION OF METHANE, frequently called fire damp or marsh gas, in a number of typical gold mines on the Pacific Coast has caused the Bureau of Mines to take special notice of the presence of this gas in metal mines, where miners are comparatively unfamiliar with its dangerous properties.

Out of five gold mines in which the air was sampled by the Bureau's experts, three showed methane in sufficient quantities to cause ignition. Decomposition of old timbering underwater in abandoned workings has been suggested as a possible source of methane, but no proved examples of this are on record.

Summing up its conclusions, the Bureau's staff at work on the subject makes the recommendation in a recently issued report that any California gold mine operator whose properties contain the type of carbonaceous rocks which give off methane, or timbers decomposing under water, should give serious thought to mechanical ventilation and proper control of air currents, thus insuring dilution of the gas.

ALASKAN "MONOPOLY" ATTACKED

OPERATION OF GOVERNMENT ships between Pacific coast ports of the United States, and Seward, Alaska, was urged by Delegate Sutherland, Alaska, in a speech delivered on the floor of the House, the point being emphasized that such transportation would bring material relief to mines in the Territory.

Mr. Sutherland declared that only one copper mine was operating in Alaska that was not included in the string under the steamship "monopoly" which he stated controls ore shipments as well as the smelter at Tacoma, Wash.

Urging passage of legislation placing the government in charge of the steamship lines in question, he asserted that proposals to enact laws of this type was opposed in Washington by a lobby maintained by the Alaskan transportation interests.

BRITISH ADMIT PRICE-CUTTING IN EXPORT COAL RIVALRY

BRITISH COAL exporters' views concerning the industrial battle which is being waged for control of markets for which producers of the United Kingdom and this country are striving are interestingly presented in the following quotation, taken from a British trade paper which offered it as the opinion of one of the largest British producers:

"It is quite a mistake to imagine that we have definitely recaptured our foreign markets from the competition of the United States. In 1913 we exported over 73,000,000 tons. In 1920 the amount exported was less than 25,000,000 tons and for 1921 rather less.

"Where we have recovered markets from the U. S. it has been by drastic price cutting. The States are by no means out of the game but are ready to take advantage immediately of any opportunity such as would be afforded them by our raising prices against our foreign customers. U. S. exporters are considering the situation very closely, and are continually worrying their government for facilities which will aid them in their fight against us."

REVIEW SOUGHT IN UTAH SUITS

THE UTAH CONSOLIDATED Mining Company has petitioned the Supreme Court to review its four cases against the Utah Apex Mining Company, decided recently by the Circuit Court of Appeals, 8th Circuit. The suits were brought in the Utah District Court to establish title to a portion of the Yampa limestone lode in the Bingham or West Mountain district of Utah. Separate mining locations were made and title acquired under such locations to different but contiguous segments, and separate suits brought to quiet title to each and for an accounting. The District Court decided in favor of the Apex Company, which was affirmed by the Circuit Court. The question involved is whether the Yampa limestone, containing the ore bodies in controversy, is a lode within the meaning of the mining statute as understood by miners. The Apex Company contends that the issue of whether a mineralized limestone bed constitutes a lode is not to be determined by the quantity of ore which has been removed or actually developed within it, but that it may constitute a lode with comparatively little commercial ore therein.

CITES HIGH COST OF DRILLING IN FOREIGN FIELDS

CITING the cost of oil drilling operations in remote and isolated fields, such as are located in various Latin-American countries, as a factor to be taken into deep consideration in connection with policies designed to encourage development of petroleum resources in regions not yet exploited, A. W. Ambrose, chief petroleum technologist of the Bureau of Mines, told a recent gathering of Pan-American diplomats in Washington that it is probable the first well drilled by a prominent producing company in Colombia cost not less than $500,000, a figure ten times that at which the cost of an average similar well in the United States is placed.

The government has recognized this "high cost factor" in framing its liberalized basis for royalty payments on oil production in Alaska, Mr. Ambrose declared. "It is interesting, though disconcerting," he said, however, "to note that in spite of these attractive features, little, if any, drilling will result in Alaska during 1922."

DECISION BY I. C. C. ON RATE QUESTION EXPECTED PRIOR TO APRIL FIRST

By C. H. Farrell

AFTER SEVERAL WEEKS of taking testimony the Interstate Commerce Commission will, within a few days, hand down its report as to whether or not any reductions in the present level of rates can be made. There remains only the rebuttal evidence of the carriers, which will take three days, and the arguments of the various interests who have appeared during this hearing, before the whole matter will finally be submitted and ready for decision. The carriers have been given an opportunity and have placed before the Commission voluminous exhibits showing their financial condition and any other facts which they considered pertinent. The shippers, represented by numerous attorneys and traffic men from all the industries, have had their day in court, and if the problem can be solved by an extensive showing of facts the Commission surely has those facts in its possession. The American Mining Congress has placed before the Commission the case of our industry, and a detailed reference will be found to it elsewhere in this issue. The statement by Secretary Hoover, which many consider to have emanated from the administration, is also printed in full in this issue. There remains only the final arguments during which J. F. Callbreath, secretary of the American Mining Congress will advocate reduced rates on raw mine products, basing his arguments on exhibits and testimony offered by the American Mining Congress February 1. The Commission expects to conclude the hearings on March 11, and it is the general belief that a decision will be rendered prior to April 1.

CAR SUPPLY—There were 467,997 freight cars idle on February 8 on account of business conditions, a reduction of 21,845 since January 31. Of this total 296,659 were ready for immediate service and 171,338 represented the number in need of repairs over and above the number normally in bad order. During the week of February 8 the reduction in box cars was 10,646, in coal cars 22,794 and in coke cars 838. Stock cars, however, increased 364. On February 1 14.5 percent of all cars on line were in need of repairs compared with 13.9 percent on January 15. Seven percent is considered normal.

TONNAGE DECLINE—During 1921 the carriers estimate that their traffic fell off approximately 23.3 percent compared with the previous year, the greatest decline, both relatively and absolutely, that the railroads have ever suffered in any one year. The number of tons of freight multiplied by the number of miles carried totalled 344,167,000,000, or 104,390,000,000 less than in 1920. This decrease was greatest in the eastern district, where it amounted to 24½ percent. The western district came next, with 22½ percent, and the southern district last, with 20.6 percent. Taking the month of December alone we find a reduction in traffic compared with the previous year of 25.9 percent, and a reduction in net ton miles of 8,963,000,000.

REDUCED COAL RATES TO KANSAS CITY, MO.—The Interstate Commerce Commission has just rendered a decision in which it finds that the proposed rates on lump and slack coal from producing fields in Kansas, Missouri, Arkansas and Oklahoma, to Kansas City, Mo., as well as reduced rates on fine or slack coal from mines on the Chicago & Alton in the Springfield-Illinois district to Kansas City, Mo., are not justified. The Commission has ordered the carriers to cancel these schedules which proposed these new reduced rates. The investigation in connection with this proceeding was participated in by representatives of coal operators in numerous parts of the surrounding country. The Chicago & Alton protested against the reductions from southwestern fields, and the southwestern carriers objected to the reductions from the Chicago & Alton mines. Those representing the municipalities of Kansas City, Kansas, and Kansas City, Missouri, contended at the hearing that the time is ripe for general reductions in coal rates and that those proposed, both by the southwestern lines and the Chicago & Alton, should be allowed to go into effect.

They also called the Commission's attention to the elimination of natural gas and the limitation of the supply of fuel oil which had greatly increased the demand for coal at Kansas City, in fact, to such an extent that the southwestern fields do not produce enough steam coal to fill the demands. Representatives for Omaha and South St. Joseph contended that a reduction from the Springfield mines, as well as from the Southwestern mines, to Kansas City, without corresponding reductions to upper Missouri River cities which compete with Kansas City, would increase the present unfair and unduly prejudicial relationship in favor of Kansas City. The Fifth and Ninth Districts Coal Bureau opposed the reductions from southwestern fields unless there be at least a corresponding reduction from mines in the Springfield group, and also contended that to grant the southwestern reductions would unquestionably result in shifting the tonnage from Alton and Wabash mines and excluding Illinois coal from Kansas City. They opposed the reductions proposed by the Chicago & Alton unless corresponding reductions were made from other Illinois groups. The Coal Operators' Associations of Southern Illinois objected to the proposed reductions from both fields on the ground that no corresponding reductions were proposed from Southern Illinois mines.

In summing up, the Commission stated that it did not feel that particular reductions of the kind proposed should be encouraged during a period when the question of general reductions in rates is under consideration, especially in view of the admissions and assertions that the reductions dealt with in this case, if allowed to become effective, would mark the beginning of a rate war between certain individual carriers in the southwest and the Alton. The finding that none of the reductions proper were justified followed. This decision, when considered in light of the numerous inquiries which have been made all through the general rate hearing, leads to one conclusion, and that is that there will be a general reduction in all the rates on coal whether the Commission makes any other reductions or not in its general inquiry.

As the freight rate applying directly on ores, to say nothing of the entent to which freight rates are reflected in the cost of mine supplies, is such a considerable item in mining operations and is the only item substantially out of line at the present time, relief through reduction of freight rates is necessary before operations can be resumed. This is the crux of the statement presented to the Commission by A. G. Mackenzie, secretary, Utah Chapter, American Mining Congress, in outlining the situation, particularly as it affects the mining industry in his state.

"The attitude of Utah ore producers," Mr. Mackenzie declared, "is to cooperate with the railroads and they assume that the railroads have facilities to handle readily a tonnage at least equal to that of 1913. It is our opinion that the railroads would themselves profit financially through the reestablishment of rates which would move the large tonnage of ore that cannot move under present rates. The exhibits in this case indicate, and it is the opinion of Utah shippers, that a heavy increase of tonnage would immediately follow a reduction of freight rates. The mine owners are naturally anxious to have their ores moving as mine property deteriorates rapidly when idle and a shut down in the case of a mine is much more undesirable than in the case of almost any other kind of property."

SURVEY REPORTS—The Geological Survey has issued the following reports: Manganese and manganiferous ores in 1920: Gold, silver, copper, lead and zinc in Montana in 1920; gold, silver, copper, lead and zinc in Utah in 1920; zinc in 1920; Gems and precious stones in 1920; Concrete stone and blocks in 1920.

IMPORTANT TAX DECISION

OF GREAT IMPORTANCE to mining corporations in whose profits tax cases paid-in surplus may be an important factor in computing invested capital, is the recent decision of the Committee on Appeals and Review, in which it was recommended that retrospective appraisals be accepted as paid-in surplus when made upon the basis outlined in its recommendation and when the facts upon which the appraisals are based have been established by proof. The committee recommends that in all cases where the law directs that the value of property at a given basic date be ascertained, the income tax unit be instructed to receive such proofs of the facts as are ordinarily accepted in important business transactions of a like character, and that the practice which has obtained in the unit in refusing to receive such proof on the ground that it consisted of so-called retroactive appraisals, be discontinued. The only limitation placed upon such appraisals is that contained in a previous recommendation of the committee, in which it was held that such appraisals must be made as of the exact date on which the tangible property had been conveyed to the corporation; "that is to say, in the light only of knowledge or facts ascertainable on that date and not in the light of subsequent happenings."

Many mining corporations which were organized prior to the incidence of the Federal income and excess profits tax laws received properties which had a value greatly in excess of the par value of the capital stock issued therefor to the incorporators; and any such corporations that failed to claim paid-in surplus to the extent of such excess value, and on account of such failure were placed in the higher excess profits tax brackets because of the high ratio of net income to invested capital, may still establish their claims and thereby secure refund of any overpayment.

The Tax Division of the American Mining Congress has made a specialty of such cases, and is in a position to give valuable aid to any taxpayer in the preparation of claims for paid-in surplus.

TRI-STATE CHAPTER ELECTS OFFICERS

THE TRI-STATE Chapter of the American Mining Congress at its recent annual meeting elected F. N. Bendelari to be Governor, and chose the following as members of the Board of Directors, for terms of three years: C. F. Dyke, J. W. Newton, W. T. Landrum, P. W. George and C. A. Rice. M. F. Owen was elected to take the place of L. L. Fillius, who has left the district. The Governor appointed the following executive committee: C. F. Dyke, E. Z. Wallower and D. R. Muir.

NEW KEYSTONE CATALOG

THE THIRD EDITION of the Keystone Coal Catalog, just off the press, contains all the valuable features of the past editions with the addition of many new ones. Practically every part of the book has been revised and new material of value added. The supplementary coal analyses, which are a feature of the treatment given each state, have been enlarged, as also has been the data given on the fusibility of coal ash.

The catalog is published by the Keystone Consolidated Publishing Co., Inc., Pittsburgh, and includes the following special articles among the contents of its estimated 1,400 pages: The Coal Fields of the United States; Descriptions of Coals, According to Rank; Qualifications of Coal for Each of Fifteen Commercial Usages; Description of all Coals Mined in the United States; The Sampling of Coal; The Composition of Coal; The Preparation of Coal; Storage of Coal; The Fusibility of Coal Ash; The Purchase of Coal on a B. t. u. Basis; Coke—furnace, foundry and domestic; American Export Coals, and Tidewater Piers and Pools. Fifteen extensive tables are presented, covering detailed data concerning the coal mining industry's operation through the United States. The catalog is priced at $10.

EUGENE R. DAY SUCCUMBS

EUGENE R. DAY, for years a prominent figure in the mining industry of the northwest, died suddenly in Seattle, Wash., February 11. Mr. Day, who was the largest individual owner of mining property in the Cour d'Alene district, had been ill for several months, but his ailments were not considered of so serious a nature as to cause anxiety, causing news of his death to come as a distinct shock to his relatives and friends.

Mr. Day was born near Truckee, Nev., August 18, 1874, coming to the Cour d'Alene district with his parents at the age of 13 and residing there continuously since that time. Following discovery of the Hercules ore body, his time and attention largely was absorbed by extensive mining operations, in which he gained success and a fortune which placed him as one of the richest men in Idaho.

Mr. Day is survived by his wife; two brothers, Harry L. and Jerome J. Day, and two sisters.

DATA CONCERNING PLATINUM

THE FOURTEENTH edition of "Data Concerning Platinum," an attractive booklet issued by the Baker Platinum Works, Newark, N. J., now is being distributed. It contains new tables, illustrations and text matter descriptive of appliances made of platinum.

SECRETARY HOOVER'S STATEMENT BEFORE I. C. C. STANDS AS AN EPIC ON TRANSPORTATION

SECRETARY HOOVER many times has referred to the transportation situation as the biggest log in the economic jam with which the country is dealing. It is to the railroad question, undoubtedly, that he has given the most attention of all issues with which he has come in contact since he entered into the office dedicated to lend the Government's assistance to business. His remarkable vision, coupled with the facts he has gathered during his study of the transportation quandary, has brought an unusually clear and constructive statement before the people. This statement, made by the Secretary before the Interstate Commerce Commission during the general hearings on railroad rates, contains so much vital information and such valuable conclusions that it follows in full.

IN RESPONDING to the invitation to discuss some of the problems present in your general railroad investigation, I shall devote myself to three of the railway topics which especially arise from the present economic situation.

I do not need to review at length that we are recovering from the destruction and inflation of the greatest war in history, that we are suffering from the waste, the extravagance, and over-expansion of the post-war boom, and that the war has brought about great shifts in the movement and price levels of commodities between nations.

I would, however, suggest that it might be profitable for our people to get a somewhat clearer perspective of our own, and the world's, troubles and problems. Even a superficial survey must bring us out of an atmosphere of gloomy introspection into an assuring realization that, great as our dislocations may seem to be, we relatively are in an enviable position. Our nation is unshaken, and as a people, we are getting our bearings in a world of perplexing economic adjustments. While there is unemployment and lack of profit taking, we are free of panic. We are comparatively more restless than injured. For instance, as heavy as our tax burden is, it is still less than one-half as great in proportion to our national productivity as the other states in the war.

The violence of our readjustment, however, is without parallel, and we sometimes tend to color our measures for the future by the depression we are in. The fact is, that we must predicate all plans for the future on the ultimate return of the American people to a normal economic activity, with our annual progress in the expansion of our production, of our plant and equipment, of our skill and our efficiency. There can be no question that this return will take place, and no responsible body will approach our problems on any other basis. Not one of us would submit to the charge that we were not prepared to bet against any odds upon the future of the United States. Our problem is to expedite this recovery—to speed up employment of our workers, and thereby find market for our farmers.

If we look at the national economic situation as a whole, the greatest impulse that can be given to recovery from any source whatever is a reduction of rates on primary commodities combined with the immediate resumption of railway construction and equipment. The first depends upon reduction of operating costs, the second upon restoration of credit for our railways.

One thing is absolute. Our transportation facilities are below the needs of our country, and, unless we have a quick resumption of construction, the whole community—agricultural, commercial, and industrial—will be gasping from a strangulation caused by insufficient transportation the moment that our business activities resume. For the past five years we have had no consequential expansion to our railway transportation machine. With but one interval of 9 months in 1918 and 1919 we had a car shortage throughout the whole of the years 1916-17-18-19 and 20. This shortage rose to as high as 160,000 cars, with a corresponding shortage of motive power. We paid tremendous sums in commercial losses and unemployment in consequence. We laid it onto the war. We should lay it onto our lack of foresight and antagonism to railroads.

Few people seem to realize the amount of expansion in our transportation machine necessary to keep pace with the growth of the country. And an equal few seem to have any notion of the price we pay for not having it. Our country is more dependent upon railway transport than any other. All others have comparatively greater coast lines and internal waterways. The experience of the twenty years before the war has shown that we must build an extension of lines, including terminal facilities, additional sidings, etc., every year equal to the construction of a new railway from New York to San Francisco. We must add at least 120,000 cars and 2,500 locomotives annually to our equipment. Since we entered the war in 1917, we have constructed at least 10,000 miles of railways less than our increasing population and economic

HERBERT HOOVER

development called for, and we are behind in rolling stock by about 4,000 locomotives and 200,000 cars. I wish to emphasize that unless we can have an immediate resumption of construction and equipment, our commercial community will pay treble the cost of the whole of them in their losses of a single season. The very moment that we reach anything like normal business we shall see a repetition of car shortages, followed by an increase in the cost of coal to the consumer from one to three dollars a ton; we shall again see premiums of 20 cents a bushel for the use of cars for moving grain; we shall in fact see a shortage of commodities to the consumer; and we shall see gluts upon the hands of the producers. We shall see factories filled with orders again closed for lack of cars; we shall see large intermittency in employment; and we shall see the usual profiteering in commodities due to a stricture between the producer and consumer.

There would be no difficulty whatever, by basing such losses on the experiences we have already had, to calculate a loss to the American people of a billion dollars for each one of these periodic transportation shortages.

Furthermore, there is nothing that is so irrecoverable a loss to the nation as idle shops and idle men. Today we have both. There is nothing that will so quickly start the springs of business and employment as an immediate resumption of construction and equipment of the railways. When business does resume, we shall need all of our capacity for the production of consumable goods. We shall not only find it strangled for lack of transportation, but we shall find ourselves plunging into the manufacture of this very railway equipment and construction in competition with consumable goods for materials and labor. Herein lies the basic cause of destructive price inflation and booms, with all their waste and over-expansion. In times of depression, we should prepare for the future, and, by doing so, we can cure the depression itself.

If we examine the fundamental reasons for failure to resume equipment, we will find them in the loss of confidence in railways as an investment and the competition of tax-free securities. We have passed the period of credit strain in this depression. Surplus capital is pouring by hundreds of millions monthly into tax-free securities and foreign loans, and yet our railways are unable to finance the most moderate of construction programs. The confidence of the public in railway investments was at so low an ebb before the war that finance by the issue of common and preferred stocks had become impossible and railway expansion was living on bond issues. The confidence of an assurance and continuity in earning power to cover this burden of bonds has been even lowered since the war began, because of the uncertainties of both rising and falling prices, of rising and falling wages, of rising and falling rates preventing all regularity of earnings upon which an investor could be convinced, even if no other difficult factors entered into the problem. I see no occasion to go into the labyrinth of past railway finance, its propriety, or lack of propriety, its foolishness or its skill. That generation is gone by. This Commission approaches the financial problems of the railways upon the actual value, not upon their issues of securities, and I take it that we are living for the future, not the past. We want transportation, and we want it with the values of private initiative and clean public service.

If we look to the immediate future with its complete necessity of paring the railway earnings down to little more than bond interest, until we give relief to the shipper (and thus the primary foundation to business recovery) I can see little likelihood of convincing the investor as to his margins of safety. There is an atmosphere that our railways will never again earn profits, and that they are not as an industry worthy of investment, and that because private investors will not come to their assistance nobody can do anything.

Far from it being impossible for our railways again to return to a profitable footing, I believe it is possible to demonstrate that on an average they will become very profitable. If we assume that the reduction of prices and wage levels will settle at a plane no lower than 50 percent over pre-war, and if we assume that the present rates are to maintain, and if we assume restored traffic, then the earnings of our railways would exceed 15 percent on the whole of the Commission's tentative valuation. Surely there is room here fir safety to investment, as well as relief to the shipper.

But the circumstances being as they are, confidence being at a low ebb, we do not have the equipment necessary for our business. We are driving headlong for a setback to our whole commerce the very moment that we begin to get on our feet.

In these circumstances, it seems to me vital that the railways, as our greatest industry, should propose a courageous program of broad-visioned betterments, and, if necessary, the government should consider giving the use of its superior credit. It would not cost the taxpayer a cent to give the government guarantee to equipment trusts upon the primary responsibility of the railways the proceeds devoted entirely to improvement and equipment. This is no proposal to take money from the taxpayer. It is a proposal to save him from paying treble the amount of his guarantee in profiteering and losses. It will render a reduction of rates earlier, for, unless something is done, the improvements will have to be paid over years out of increased rates. Nor would we lose a cent upon the guarantee, for, if American railways can not earn interest upon their borrowings, let us throw up our hands and prepare for a second Russia.

A real program of construction would, in its various ramifications, give relief to five or six hundred thousand of our unemployed. It would enable even added numbers to increase their standard of living, and thus give increased market to the produce of our farmers. Our farmers who look to foreign markets for their surplus should stop to consider that our home consumption of meat decreased nearly 7 pounds per capita in 1921, mostly owing to unemployment, and that if this decrease could be overcome, it would be worth more than a 35 percent increase in exports.

We talk glibly of giving billions of credits to foreign countries, to increase our farm exports. I wish to say, with all responsibility for the statement, that a billion dollars spent upon American railways will give more employment to our people, more advance to our industry, more assistance to our farmers, than twice that sum expended outside the frontiers of the United States—and there will be greater security for the investor.

Finally, I want to refer to the veritable witches' cauldron being fed constantly with hates distilled from the misdeeds of railway promoters in the past, from the conflicts between the railways and the farmers, between the railways and

their workmen. From all the confusion that arises from it we destroy our railways and destroy ourselves. With this Commission on one hand assuring honesty in finance, justice to the shipper and the railway investor, with the Railway Labor Board assuring justice to workers, and, above all, with a great spirit of public service in our generation of railway managers, it is time to call off the witches and take some vision of our national situation if we are to pull ourselves out of this depression.

RAILWAY RATES

Before entering upon the question of readjustment of rates, I wish to set out some factors in the present economic situation that bear upon the entire question.

The following table shows a few commodities and service groups, compared to 1913 as 100:

Farm crops, at the farm	98
All animals, at the farm	92
Retail foodstuffs	150
Cotton, at the farm	136
Wool, at the farm	101
Retail clothing	213
Steel billets, Pittsburgh	113
Copper	86
Zinc	90
Pig iron, Pittsburgh	128
Bituminous coal, at the mine (estimated 4 districts)	160
Bituminous coal (retail various localities)	198-220
Yellow pine lumber (at the mill)	189
Douglas fir lumber (at the mill)	125
Lumber (retail) partly estimated	200
Cost of living, variously estimated from	162-180
Wage scales (approximate)	
Farm labor	135
Textile industries	210
Steel industries	150
Railways	200
Metal trades	218
Building trades	190
Coal mining scales	173

This table at once demonstrates:

(1) The inequality in prices and wages between different groups of commodities.

(2) The great increase in spread between "producer's" and "consumer's" goods.

(3) The lag in wage scales.

As the population engaged in the "deflated" producer's goods—agriculture, and metals, wood, etc.—comprises one-half the total in number of the nation, their power to buy the same ratio of consumer's goods has been reduced to less than 70 percent of pre-war, and is the consequent cause of a large part of the industrial and commercial unemployment and stagnation in our cities and our transportation.

I wish to especially call your attention to the indicated enormous increase in spread between primary producer's and ultimate consumer's goods. In considering it, we must bear in mind that when we use 100 for both consumer's and producer's goods of 1913, we have already included the spread between producer and consumer at that period. I, therefore, believe that the index numbers indicate an increase of 100 percent in the actual spread. It is right here where the most of our economic difficulties lie today. Our increased cost of manufacture and distribution bears two relations to the rate question—first, that the increase of rates of from 30 to 100 percent in different commodities are part of it, and are in turn part caused by it; and, second, the increased rates bear very unequally on different groups in the community.

If we search for the cause of this increase of spread, we shall find therein a vast complex of increased taxation, increased wages, rents, and a dozen items, all reacting upon each other, and also expressing themselves in increased cost of operating the railways. For instance, the total increase in national, state and municipal taxes since 1913 is approximately $5,640,000,000. At the present purchasing power of the dollar, our total national productivity is probably somewhere around 50 billions of dollars, of which over 10 percent must now be devoted to increased taxes. This sum of money must be obtained either from the producer or the consumer, and, in any event, a considerable part of the taxes contributes to widen the spread. Because the increase in spread due to taxes necessitates a spiral of increased wages, rents, etc., and before its force expends itself, my own opinion is that possibly 20 points in the distorted index number flows from increased taxes.

The increase of railway rates since 1913 in Class I, railways, 1921, is about $2,600,000,000, of which about $1,400,000,000 are due to wage increases and about $160,000,000,000 to tax increases. If our traffics were normal the total increase of rates would be more like $3,500,000,000. These sums enter into this increase in the spread and carry with them a further trail of increased living costs and again a spiral of higher wages, rents, etc., in all other branches of manufacture and distribution.

There are other causes of the increased spread, some of which will be mitigated with time.

No one can say to what particular table-land of prices and wages we may settle upon, but it is a certainty that the exchange value of producer's goods will not again line up with consumer's goods unless we can decrease the costs and eliminate the wastes of our whole manufacturing and distribution trades. And unless we can secure their nearer proximity we will retard a return of employment and prosperity.

I wish to digress for just a moment from railway to agricultural subjects, to point out that the recent projects for fixing farm prices by law are apparently founded on the notion that by raising agricultural prices up to the levels of consumer's goods we can remedy the extreme hardship of our farmers. Even if it be possible to raise the prices, much less advantage would accrue to the farmer than anticipated. Unless the "spread" is decreased by actual savings, the costs of manufacture and distribution would be at least partially increased by higher prices of producer's goods. The spread is fundamentally due to increased cost of manufacture and distribution, not to the fall in producer's goods. The real remedy is an attack upon the causes of the spread and thereby to bring consumer's goods down to the producer's buying power.

It is a certainty that in order to decrease the spread, railway rates must come down, and for rates to come down costs of railway operation in wages and prices of supplies must be reduced. Until this adjustment is secured, the economic machine will continue to move slowly. We cannot and should not expect wages to come back to pre-war levels. Many of our wage scales were too low in pre-war times. They can follow down step by step with the cost of living, but there are permanent charges in this spread, such as the taxes, which will hold the cost of living about pre-war levels. We must gain our other reductions in the spread by increased national efficiency.

THE METHOD OF READJUSTING RATES

The involved complex of transportation rates was obviously originally based on some relationship to the value of commodities, mitigated by competition. In other words, the old slogan of "what the traffic will bear" had some economic background. But this entire conception of rate-making was destroyed by horizontal raises. We have rates clearly beyond what the traffic can bear.

The increases in railway rates during the past five years have fallen with extraordinary inequality on different commodities and different groups of people in the community. The country grew up, its industries were distributed under ratios of costs between different commodities, ratios between raw materials and finished goods, ratios between the farm and city. These have all been distorted by the horizontal rises. The increases in rates since 1914, for instance, have added probably less than 1 percent to the price of cotton goods on the average haul, but it has added probably 60 percent to the price of coal. The increased rates since 1914 have added nearly 100 percent to the cost of assembling the materials for pig iron.

All this is artificially forcing our industry to move toward their raw materials. This does not alone represent the starting of a new factory; it is a movement of the whole mechanism of the community, labor, homes, schools, railways and what not—an enormous duplication of plant and loss of capital. We will ultimately have the rates readjusted and then we will destroy the new industries created under it.

Of equal importance there is a new economic light on this distortion of rates evident under the stress of the last few years. That is, the better realization that some increase of rates come mostly off the producer while others are paid by the consumer. Increases in spread between producer and consumer do not fall equally upon each of them. In primary commodities where the price is fixed by international competition, the increase or decrease in rates is a deduction from the producer. Take wheat, for instance, the point of competition with foreign produce lies at Liverpool. The net to the producer is Liverpool less transportation and other handling charges. Therefore increases of rates are a reduction from the farmers' price. The same thing applies to the producer in certain cases of domestic competition. Also where there is rapid turnover, as in manufacture, and consequent ability to reduce supply, the consumer pays the freight, as processes of productivity will not continue below profit point. In most manufactured commodities the consumer pays the freight, for production quickly shrinks when prices at the factory become unprofitable and the price to the buyer is the factory price plus the freight. For instance, in hides, the farmer gets the international price less freight. On boots he pays the manufacturer's cost, profit and freight.

It appears to me that with the paralysis induced by the increased spread, we have to take a broader vision of what part of the community is suffering most and direct such concessions through the railway rates as can be given to that group—if we would better equalize the whole economic load.

During the past eight months the railways have made many thousand readjustments of local rates in endeavoring to heal local distortions, but I am convinced that the whole railway rate structure needs a most systematic overhaul in the light of these new economic forces that have been brought into play. We obviously must maintain the average rate that will support our transportation systems adequately and such an overhauling of rates might quite well mean the advancement of rates in certain commodities in order that compensation can be given to others where there is undue duress.

If I were to discuss the rates charged today I should say at once that a decrease in passenger rates is not nearly so vital to the community as freight rates, for passenger rates do not enter into the "spread" in proportion to the relative volume of earnings. If I were examining the freight rates I should at once say that coal, metals, wood, and agricultural and other producers goods should be reduced to the bottom before L C L and class rates are touched.

I would be willing to go even farther and say that I am convinced that even if the Commission cannot at the present moment justifiably reduce railway incomes a single dollar, it is warranted in investigating the possibility of some relief to the more distressed commodities by a revision of some rates upward. There is perhaps no great field for changes in this direction but it is worth inquiry. As mentioned above an economic analysis of our industry will show that L C L and class rates are far too low compared to the rates on primary commodities.

With the gradual return of the traffic to normal, with decreased operating costs, relief in rates will be available, and it would be an economic crime to apply such relief by horizontal reductions to all rates thus giving relief to higher priced goods and travel, when the vital mainspring of our economic life, our agriculture and fuel and metals are choked.

THE PRESENT RATE SITUATION

Determination of anything in the nature of permanent rate basis is in my own view impossible at the present time because:

The last five years of changing administration, irregular traffic and wildly fluctuating wages and prices of materials give us but little reliable historical criteria upon which to base the future. We are in the midst of violent economic readjustments, of a profound industrial depression. No one can determine to what plane the reduction in operating costs will settle. No one can estimate the volume of traffics that are probable for any particular period ahead. It appears to me, therefore, that the Commission will need to temporize with the situation for some time, and that its conclusions may well fall into three periods:

1st.—The immediate present.

2nd.—During the early period of decreasing costs and increasing efficiency and slowly recovering traffics.

3rd.—Normal operations.

The Immediate Present:

If we survey the results of the past year in the application of present costs and rates, we find many railways failing to earn interest upon their borrowed capital; we find some others more fortunately situated who have earned dividends on their share capital. One or two exceptions of low bonded indebtedness have done extraordinarily well on their share capital. If we survey the situation by districts, in order that single instances do not mislead us, we will find that the whole of the Class 1, Southern Roads, barely covered bond interest, while the most fortunate group, the Western Roads, show an earning of only 4 percent in 1921 upon their tentative valuation. Moreover, it is obvious that maintenance has been held to a low level and new equipment and extensions practically nil.

The present earnings in their perilous closeness to bond obligations seem to me to dispose of the question of immediate important rate relief, if we do not wish widespread receivership and shocks to our whole commercial fabric.

I believe there are cases where earnings could be increased by lower rates. I know that it is contended that such opportunities do not exist, but no one can review the testimony given here during the past few weeks without concluding that the rates in special instances are stifling business. These directions are perhaps not important in the whole problem of rates, but I am convinced that lower rates would recover lost traffic, such as export coal, substitutions in building materials, gains in water competition, etc.

The Second Period: During 1922.

We must assume that those railway wages and supplies which are out of line will at least in part follow down to the levels of decreased cost of living; we must assume that the efficiency that is slowly emerging after the government management will still further increase; we must assume that the volume of traffics will increase toward normal.

I have the feeling that the railways, being our greatest business, will agree that all these savings should be instantly devoted to relief in the rates on primary commodities in order that we should expedite the recovery that can only come through decreased spread between producer's and consumer's goods.

I recognize that the uncertainty and slow production of rates in this fashion will itself delay business recovery because of the uncertainty of business as to its future costs. If our railways were in position to stand the temporary shock it

would be infinitely better to drop the rates on primary commodities tomorrow—our business recovery would come faster. But we can not ask the impossible.

If we look further to normal times, we could make a rough calculation that present wages and costs at say 50 percent above pre-war show that the railways can earn somewhere around a billion five hundred million dollars, in excess of the 6 percent minimum upon tentative valuation. As I have stated, relief is first more critically needed in the rates on primary commodities.

Some estimates given to me indicate that approximately 35 or 40 percent of revenues are involved in the groups more urgently needing relief. I think it will also bear calculation that in the income assumed above that primary commodities can eventually be reduced to pre-war rates, and still place earnings upon a basis that will inspire such confidence in investors as will secure the free flow of investment capital into construction. It is not to be expected that capital for these purposes will be available at the rate that does not exceed the taxfree securities at least 2 percent to 3 percent.

EFFICIENCY OF RAILWAYS

A great deal has been said about the inefficiency of our railway system. I do not sympathize with these statements. Comparison with foreign railways of the fundamental criteria of per ton mile costs, train loading and so forth, in the light of our cost of living, will demonstrate that our railways are of higher standards, better in methods than others and are growing in efficiency.

The consolidation of our railways into larger systems has been contemplated in our legislatures for some years past as a gain in efficiency. Its value can not be overestimated—it is not a panacea for all trouble It does give hope, however, of economies in further efficiency from more complete utilization of rolling stocks and terminals, some small degree of saving in overhead, saving in current inventories, but its probably great saving that would be decreased cost of proper finance, increased financial stability and fuller independence from the supply companies.

It is probably unnecessary to refer to the question of government ownership. No one with a week's observation of government railways abroad, or with government operation of industry in the United States, will contend that our railways could ever be operated as intelligently or as efficiently by the government as through the initiative of private individuals. Moreover, the welfare of its multitude of workers will be far worse under government operation.

We are struggling with the great problem of maintaining public control of monopoly, at the same time maintaining the initiative of private enterprise. I believe that we are steadily progressing to solution.

Great social and economic problems find their solution slowly and by a process of trial and error. We have tried unregulated monopoly, and have tried government operation, and found the error in them. We still have much to solve if we are to maintain our transportation. Much of this solution depends upon the successful initiative of the railways themselves and much of the shaping of these matters lies fortunately in your able hands.

FEDERAL POWER PERMITS

THE FEDERAL POWER Commission has issued the following permit and licenses:

Alaska Development and Mineral Company; power development on the Tyee and Anan Creeks and an 18-mile transmission line with two dams, 60 and 100 feet high, and a 9,000-foot tunnel, to produce 14,000 h. p.

The Hirst Chichagoff Mining Company of Alaska on a tributary of Didrickson Bay, Chicago Island; to develop 400 h. p. for use in connection with development of mining properties.

The Alaska Endicott Mining Company; to develop 300 h. p. on lands of the U. S. in the Juneau district for use in mining.

J. H. Cann, of Juneau, Alaska; for a project in Chichagoff Island of 60 h. p. for development of mining claims.

The Darwin Silver Company of Independence, Inyo County, Calif.; for transmission line 17 miles long to conduct power from the lines of the city of Los Angeles to mining properties in Inyo County.

ATTRACTIVE SPECIAL EDITION

THE SIXTH Anniversary-Convention Number of the Northwest Mining Truth, bearing the date-line of "Seattle, Wash., February 15, 1922," carries the essence of optimism mingled with masses of real news, all the way from its first page, headed by the lively line "Pardner, Prosperity's Sun's Up! Let's Go!" to the final item on the last page in which is covered the situation surrounding proposed Federal blue-sky legislation.

Prominently featured is a special article by Dr. H. Foster Bain, director of the U. S. Bureau of Mines, in which is outlined the work which the bureau is doing for the mining industry in the west. On another page, Maurice D. Leehey, of Seattle, points out the great need of individual freedom for Alaska. The assurance with which the mining industry in Idaho faces the future forms the subject of another article, in which Stewart Campbell, inspector of mines for the State of Idaho, indicates bright prospects without indulging in the banality of false optimism.

A number of other feature stories, interwoven with an abundance of "spot news" fills the remaining pages of a magazine which wins well deserved praise for those responsible for its contents and appearance.

MINING EXHIBIT BY GOVERNMENT

THE WORK of the various bureaus of the Interior Department in aiding the mining industry will be shown at the exhibit of the Government at the Brazilian Centennial Exposition at Rio de Janeiro in September. The act of Congress providing for the exhibit authorizes the Secretary of the Interior to make an exhibit of the mining industry but private advices from Brazil indicate that what is desired is an exhibit of the work of the government, since the centennial is to be a government celebration rather than the usual type of international exposition.

TIMBER CONSUMPTION IN MINES

THE annual underground consumption of timber by the mining industry of the United States, as estimated by experts of the Bureau of Mines, amounts to 293,365,000 cubic feet, of which 151,140,000 are used in bituminous mines, 61,600,000 in anthracite mines, 31,500,000 in iron ore mines and 49,125,000 in mines producing other ores. The increase in annual timber consumption in mines since 1905 has been 46 percent. The Bureau says a serious problem confronts the mine operator in the important coal and metal mining regions of the East and West in the decrease in supply and quality of timber. The cost of mine timber to anthracite mines has increased from 6.6 to 27.5 cents per cubic foot from 1905 to 1920; in iron mines in the Lake Superior region from 5 to 24 cents.

INDUSTRIAL NOTES

A NEWLY-DEVELOPED dynamite which, it is announced, will prove an important factor in reducing explosives costs in quarrying, road building, construction and other open work has just been perfected by the Du Pont Company.

The new "powder" is known as "Dumorite," and is made with a double base of modified nitroglycerin and guncotton. It cannot freeze, and does not produce headache.

In putting "Dumorite" on the market, the Du Pont Company announces that the explosive will effect savings of one-third on the dollar. It is as powerful, stick for stick, under ordinary conditions, as regular 40 percent dynamite, its economy consisting in the fact that each case contains approximately one-third more sticks.

Four years of research work carried on in the laboratories of the General Electric Company in its efforts to satisfy the need for a cast alloy which will stand high temperatures and which can be made on a commercial scale have resulted in the placing upon the market of a new material known as Calite, which is being manufactured by the Calorizing Company, of Pittsburgh.

Calite is a patented alloy which, according to tests conducted by the General Electric Company's research engineers, is recommended for temperatures as high as 2200° F. This alloy is the product of the electric furnace, and castings are made following approximately the usual steel foundry practice. It casts well into the various commercial shapes and sizes, and is sufficiently fluid to be made into small and thin sections.

A series of tests have been conducted to determine the relative merit of Calite as compared with the other alloys now on the market with the result that apparently Calite will stand a temperature approximately 100° F. higher than the next best competitive material.

The fact that Calite can be made into casting shapes that can be made from steel means that its application is extremely broad. Among the uses to which it has been put to date may be mentioned containers for carbonizing or case-hardening work, annealing, heat-treating, molten lead, salts and cyanides.

The Hercules Powder Company, Wilmington, Del., has announced a price reduction of $7.50 per 1,000 feet in its list price of Cordeau Bickford detonating fuse, effective February 1, applying to the No. 6 plain, No. 6 countered, and No. 8 double countered grades. There also is a reduction in price of Cordeau crimpers and straight unions for connecting ordinary Cordeau Bickford.

THE COAL INDUSTRY came again into the senatorial limelight when Senator Kenyon, of Iowa, on the eve of his retirement to become a Federal judge, introduced the bill which aims at the settlement of disputes in the coal mining industry, between employers and employees, by the creation of a National Coal Mining Board. This bill, which is of especial importance to the coal mining industry, is reviewed in this month's legislative résumé.

Possibly second in importance to the mining industry is the bill passed by the Senate, which has since been signed by the President, authorizing the association of agricultural producers. There also has been a bill introduced in the House appropriating $500,000 for the relief of suffering coal miners and their families in Kentucky, West Virginia, Alabama, Ohio, and Pennsylvania.

Representative Robsion, of Kentucky, introduced a resolution providing for the investigation of conditions prevailing in the coal mining industry, with particular reference to its paralysis.

Especially important in the legislative program of the month is the passage by the House of the bill appropriating funds for the Interior Department, which includes appropriations for the Bureau of Mines and the Geological Survey. In another part of this issue this appropriation is discussed in full.

Before congressional committees probably the mining industry is most interested in the progress of the bill for a tariff revision. This committee has met a snag in the consideration of the Valuation Plan but it is hoped that the final bill will be reported early in March.

The House Interstate and Foreign Commerce Committee has been holding hearings on the new bill by Representative Denison on "blue sky." The American Mining Congress sent out a questionnaire to its membership on this important subject and J. F. Callbreath, Secretary of this organization, appeared before the committee on February 20 and urged the necessity of taking into consideration the effect which the bill will have upon producing enterprises which are dependent upon developments into which hazard enters.

The question of the reorganization of government departments will probably be deferred until the next session of Congress as it is believed that the present session's calendar is already crowded with the subjects of tariff, soldiers' bonus, etc.

It is interesting to note that more than 700 claims have been filed with the War Minerals Relief Commission under the recent act of Congress amending the original law. The time for filing these additional claims expired on February 16.

Representative Keller of Minnesota renewed his proposal which he made last year to tax land values but it was rejected by the House Ways and Means Committee.

Investigation of the alleged dye monopoly began before the Senate Judiciary subcommittee on February 20. Senator King under his resolution plans to investigate the dye monopoly and lobby to influence legislation and to subpoena practically every company and institution having any connection with dyes.

Representative Johnson of Washington has asked for an extension of the law restricting immigration to 3 percent of residents of foreign countries in this country for one year after its expiration June 30.

The following bills of importance to the mining industry have been introduced:

COAL

H. R. 10001. Introduced by Mr. Thomas. Referred to the Committee on Mines and Mining. This bill appropriates the sum of $500,000 for the immediate relief of the destitute and suffering coal miners and their families in the states of Kentucky, West Virginia, Alabama, Ohio and Pennsylvania.

H. Res. 283. Introduced by Mr. Robison. Referred to the Committee on Rules. This resolution provides that the Committee on Mines and Mining of the House of Representatives, or any subcommittee of the committee to be appointed by it, be authorized and directed to investigate the conditions prevailing in the coal-mining industries of the United States, with particular reference to the paralysis of this industry, the cause of Great Britain being able to ship her coal to the United States, and the destruction of the export coal trade of the United States; also with particular reference to the state of unemployment in the industry, destitution among the miners in this industry, and the condition of the workers in the industry, and to recommend remedial legislation based upon such investigation.

S. 3147. Introduced by Mr. Kenyon. Referred to the Committee on Education and Labor. (*Industrial disputes.*) The bill attempts to provide settlement of disputes between employers and employes in the coal mining industry; to establish a board for the adjustment of such disputes; to stabilize conditions of production, etc. The bill establishes a board to be known as the National Coal Mining Board to be composed of nine members, three constituting the labor group, representing the employes, to be appointed by the President; three constituting the management group, representing the employers; and three constituting the public group, representing the public. This board shall upon the application of any operator or organization of employes, upon a written petition signed by not less than 100 unorganized employes directly interested in the dispute, or upon the Labor Board's own motion if it is of the opinion that the dispute is likely substantially to interrupt commerce, receive hearings and as soon as practicable any dispute with respect to the wages, hours of labor, and other working conditions of employes in or about bituminous coal mines shall be decided. Such a decision shall require the concurrence of at least five (5) of the nine members. All decisions of the Board in respect to wages and working conditions of employes shall establish rates of wages and salaries and standards of working conditions, which the Board believes to be just and reason-

IMPORTANT BILLS REVIEWED IN THIS ISSUE

COAL—
- H. R. 10001: By Mr. Thomas. (Relief of destitute coal miners)
- H. Res. 283: By Mr. Robison. (Investigation of contion in industry)
- S. 3147: By Mr. Kenyon. (Settlement of industrial disputes)

LEASING—
- S. J. Res. 157: By Mr. Oddie. (Extension of time under oil, oil shale, gas and sodium permits)

BLUE SKY—
- H. R. 10102: By Mr. Denison. (Restriction of Federal blue sky authority in interstate communications)

WATERWAYS—
- H. R. 10145: By Mr. Reed. (Incorporation Lakes to Hudson Ship Canal Company)
- H. J. Res. 262: By Mr. Chalmers. (Establishment of International Board having jurisdiction of construction of Great Lakes-St. Lawrence waterway)

LEASING (Water Power)—
- S. 3117: By Mr. Ashurst. (Amending acts of 1906 and 1911 relating to lease of surplus electric power on Federal irrigation projects)

IMMIGRATION—
- H. R. 10314: By Mr. Focht. (Restriction of immigrants)

LABOR (Unemployment)—
- H. R. 10363: By Mr. Nolan. (Preparation for future periods of depression, etc.)

FOREST EXPERIMENT STATION—
- S. 3143: By Mr. Kellogg. (Providing for establishment and maintenance of forest experiment station in Lake States)

REVENUE—
- H. R. 10055: By Mr. Frear. (Amending Revenue Act, tax on gifts)
- H. R. 10054: By Mr. Frear. (Amending Revenue Act, net estate tax)
- H. R. 10331: By Mr. Perlman. (Amending Revenue Act, net estate tax)
- H. R. 10463: By Mr. Perlman. (Increase in personal tax exemption)

able. In arriving at a just or reasonable wage the Board must take into consideration the following fundamental principles: (1) Coal is a public necessity. (2) Human standards should be the constraining influence in fixing the wages and working conditions. (3) Capital prudently and honestly invested in the coal industry should have an adequate return. (4) The right of operators and miners to organize is recognized and affirmed. (5) The right of operators and of miners to bargain collectively is recognized. (6) Miners who are not members of a union have the right to work without being harassed by fellow workmen who may belong to unions and the men who belong to unions have the right to work without being harassed by operators. The organizations have a right to go into non-union fields and by peaceable methods try to persuade men to join the unions, but they have no right to try to induce employes to violate contracts which they have entered into with their employers, and the operators on the other hand have the right by peaceable means to try to persuade men to refrain from joining the unions. (7) The right of every unskilled or common laborer to earn a living wage sufficient to maintain a normal family in health and reasonable comfort, and to afford an opportunity for savings is declared and affirmed. (8) The right of women to engage in industrial occupations is recognized and affirmed; their rates of pay shall be the same as those of male workers for the same or equivalent services. (9) Children under the age of sixteen years shall not be employed in the mines. (10) Six days shall be the standard work week in the industry. The standard work day shall not exceed eight hours a day. (11) Punitive overtime shall be paid for hours worked each day in excess of the standard work day. When the Board has taken jurisdiction in a case the Board's decision shall be rendered within 60 days from the time it has assumed jurisdiction unless this period is extended by agreement of the parties. The Labor Board shall investigate and study the relations between operators and their employes, particularly questions relating to wages, hours of labor and conditions and regularity of employment. These statistics which they gather in this manner shall be published frequently. They shall collect and publish their decisions and regulations, together with a cumulative index-digest thereof at least once a year. Proper punishment is provided for failure to comply with the Labor Board's requests and decisions. The bill appropriates the sum of $100,000.

LEASING

S. J. Res. 157. Introduced by Mr. Oddie. Referred to the Committee on Public Lands and Surveys. This resolution extends the time for the performance of certain acts under the act of Congress approved February 25, 1920, entitled "An act to promote the mining of coal, phosphate, oil, oil shale, gas and sodium on the public domain," etc., by stipulating that the provisions of section 13 of this act be suspended and waived and not required as to all oil and gas prospecting permits issued during the calendar years 1920 and 1921, which have not been heretofore canceled, and all permits so issued be extended for one additional year from and after the dates thereof: Provided, that the said drilling requirements of section 13 of said act of February 25, 1920, shall be performed during the second year of said permits hereby extended, and provided further that every permittee or his assignee, in order to obtain the benefits of this resolution, shall file or cause to be filed in the United States Land Office of the district wherein the said permits were issued, within ninety days after the final passage and approval of this resolution, a notice in writing of his desire to hold said permit under this resolution. If this resolution becomes a law it will suspend the requirements that the permittee shall begin drilling operations within six months from the date of the permit, and shall, within one year from and after the date of the permit, drill one or more wells for oil or gas to depth of not less than 500 feet each, unless valuable deposits of oil or gas shall be sooner discovered.

BLUE SKY

H. R. 10102. Introduced by Mr. Denison. Referred to the Committee on Interstate and Foreign Commerce. This bill is substantially the same as Mr. Denison's previous bill and is now before the Interstate Commerce Committee, where hearings are being held. The new bill contains two major features not included in the first bill as introduced. They are (1) A list of securities which are to be exempt from provisions of this

particular Federal blue sky legislation. (2) Restriction of the measure's authority to interstate communication dealing with alleged fraudulent securities transactions. The first bill included also intrastate transactions of this character, but in the remolding of the measure it was decided that each state should be able to take care of the situation within its own boundaries.

WATERWAYS

H. R. 10145. Introduced by Mr. Reed. Referred to the Committee on Judiciary. (*Incorporating the Lakes to Hudson Ship Canal Company.*) This bill authorizes Millard F. Bowen and his associates to create a public service corporation to be known as the Lakes to Hudson Ship Canal Company which shall have all the rights, powers and privileges usually exercised by similar public-service corporations. This corporation shall have the power to purchase, acquire, develop, and operate the following properties in New York State: To construct and maintain a ship canal at least 30 feet deep, 300 feet wide and with headway of 100 feet, to start from Lake Erie at or near Seneca Shoal near Smokes Creek, running through Erie County to Lake Ontario at Olcott Harbor, and in connection therewith to construct and maintain power stations with all suitable machinery and accessories for the development of waterpower and the generation, use, and transmission of electric energy; and for the purposes of navigation, etc., the corporation may divert from Lake Erie and Niagara River and use 26,000 cubic feet of water per second to be diverted above the falls for navigation and sanitation. Also to construct and maintain a ship canal of the same general dimensions for purposes of navigation, national defense, and generation of electric energy, to start from Lake Ontario, running thence through the counties of Oswego, Oneida, etc., to the Hudson River at or near Kenwood south of Albany; and in connection therewith to construct and maintain power stations with all suitable machinery and accessories for the development of water power and the generation, use, and transmission of electricity; to cut through divides between watercourses to connect the same; to build reservoirs to stop floods and store waters; and to use all the waters mentioned in section 1 except the water to be taken from the Schohari watershed to and for New York City, for navigation, national defense and power, etc., to construct laterals and feeders to said main canals and docks, harbors, terminals, warehouses, vessels, and factories, and to carry on shipping, merchandising, and manufacturing in connection therewith in order to use all surplus power not sold to the public. The United States shall not be liable for any debts or liabilities of this corporation but shall supervise navigation structures and shall operate the locks when completed. The corporation is authorized to sell the energy generated for power or other purposes directly to the public, and shall charge rates to be fixed by State public service commissions but is authorized to charge one and one-tenth cents per kilowatt hour based upon full time for continuous service. The construction of the canals is to be begun within three years after the passage of the bill and be constructed as rapidly as possible and completed within seven years thereafter. The rights granted shall continue for 50 years after completion, and thereafter may be continued for 20 years at the option of the corporation with the approval of Congress. The United States shall have the right upon or after the final expiration of the grant to take over in whole or in part by mutual agreement all property owned and held by this corporation upon the condition that before taking possession it shall pay the net investment of the corporation in the projects taken, not to exceed the fair value of the property taken plus such reasonable damages to property not taken as may be caused by the severance therefrom of the property so taken, and shall assume all contracts entered into by the corporation. The net investment and the amount of severance damages shall be determined by agreement between the parties. The bill also provides that if more water be allowed to be diverted by treaty from Lake Erie or Niagara River above the Falls, Congress may compel the corporation to enlarge its facilities so as to use such additional water to its fullest efficiency.

H. J. Res. 262. Introduced by Mr. Chalmers. Referred to the Committee on Interstate and Foreign Commerce. (*Providing for establishment of an International Board to have jurisdiction of construction and improvement of Great Lakes-St. Lawrence waterway.*) The bill provides for an International Board composed of six members, three on the part of the United States, one appointed by the President thereof, one by the President of the Senate, and one by the Speaker of the House of Representatives, and three on the part of Great Britain. This board shall have jurisdiction of the construction, operation, and control of the improvement of the Great Lakes-St. Lawrence waterway from Lake Erie to Lake Ontario and from Lake Ontario to the sea, providing for a channel 30 feet deep, and shall determine the final plans for the construction of the improvement for navigation and power purposes. One-half of the cost of the construction, maintenance, and operation of the navigation and power works is to be borne by the United States and one-half by the Dominion of Canada and one-half of the hydroelectric power generated by the construction of this work is to be credited to the United States of America and one-half to the Dominion of Canada, and the International Board is to supervise the control, use, and sale of the power thus made available. One million dollars is appropriated to be under the control of the American section of the International Board, to be transferred to the control of the International Board when completed by the legal appointment of the Canadian section and the appropriation of an equal amount of money by the Dominion of Canada. This International Board is authorized to issue bonds guarranteed by the United States of America and Great Britain in an amount necessary to pay for the construction of the navigation and power works.

LEASING (Water Power)

S. 3117. Introduced by Mr. Ashurst. Referred to the Committee on Irrigation and Reclamation. (*Amending the act of* 1906 *and of* 1911 *relative to the lease of surplus electric power on federal irrigation projects.*) This bill amends Section 5 of the two acts referred to as follows: That whenever a development of power is necessary for the irrigation of lands, under any project undertaken under the said reclamation act, or an opportunity is afforded for the development of power under such project, the Secretary of the interior is authorized to lease for a period not exceeding ten years, giving preference to municipal purposes, any surplus power or power privilege, and the money derived from such leases shall be covered into the reclamation fund and be placed to the credit of the project from which such power is derived, provided, that no lease shall be made of such surplus power or power privileges as will impair the efficiency of the irrigation project. The Secretary of the Interior is authorized, in his discretion, to make such a lease in connection with Rio Grande project in Texas and New Mexico and the Salt River project in Arizona for a longer period not exceeding 50 years, with the approval of the water users' association or associations under any such project, organized in conformity with the rules and regulations prescribed by the Secretary of the Interior in pursuance of section 6 of the reclamation act approved June 17, 1902.

IMMIGRATION

H. R. 10314. Introduced by Mr. Focht. Referred to the Committee on Immigration and Naturalization. This bill provides that the number of aliens of any nationality who may be admitted under the immigration laws in any fiscal year

shall be limited to one percent of the number of foreign-born persons of such nationality 21 years of age, naturalized and resident in the United States, as determined by the United States census of 1900. The Secretaries of State, Commerce and Labor jointly are required to prepare a statement showing the number of persons of the various nationalities resident in the United States, as determined by the 1900 census. In case of changes in political boundaries in foreign countries occurring subsequent to 1900 and resulting in the creation of new countries, the governments of which are recognized by the United States, or in the transfer of territory from one country to another, the above mentioned officials shall estimate the number of persons resident in the United States in 1900 who were born within the area included and such revision of the population basis as to each country be announced. The number of aliens of any nationality who may be admitted in any month shall not exceed 10 percent of the total number of aliens who are admissible in that fiscal year. The Commissioner General of Immigration, with the approval of the Secretary of Labor, shall prescribe rules and regulations necessary to carry out the provisions of the act.

(LABOR (unemployment)

H. R. 10353. Introduced by Mr. Nolan. Referred to the Committee on Labor. (*To prepare for future cyclical periods of depression and unemployment by systems of public works.*) This bill provides that the head of each executive department is authorized to prepare and to periodically revise the necessary plans for all public works and projects within his jurisdiction concerning which a report has been requested by Congress, and to make the surveys and to prepare the engineering plans necessary for proposed public work and projects, in order that the work may be commenced immediately and properly prosecuted when an appropriation becomes available therefor. The Secretary of Commerce is authorized to prepare and publish monthly reports as a supplement to the Current Survey of Business of the Bureau of Census concerning the trend of business conditions, the approach of periods of business strain and overextension, or of periods of business depression, so that the President, heads of executive departments, the Congress, the governors of the respective states, the mayors of cities, and persons engaged in private industrial enterprises may properly prepare for and plan against such periods. The Secretary of Commerce shall transmit, with his recommendations, copies of such report to the President, the heads of departments, and to Congress and shall utilize the available statistics collected or compiled by any department, bureau, office, or agency of the Federal Government or of a state, or by any industrial, banking, labor, or other association, and he is authorized to obtain such additional facts and statistics as may be necessary to carry out the provisions of this section. The bill further provides that the head of each executive department is authorized, upon the advice of the President, to postpone the date of the commencement or retard the prosecution of such portions of the public works and projects within his jurisdiction, in order to prepare for and to prevent a further rise in the cyclical wave of industrial expansion and resulting business strain and oxerextension and, within the appropriations therefor, to enter upon a maximum program of public works and projects as a preparation for and in order to counteract an impending period of industrial depression and unemployment. Where a time limit has been specifically provided within which any such work or project is to be commenced or completed, this section shall not be construed to extend or remove such limit.

FOREST EXPERIMENT STATION

S. 3143. Introduced by Mr. Kellogg. Referred to the Committee on Agriculture and Forestry. (*Providing for establishment and maintenance of forest experiment station in Lake states.*) The bill appropriates $40,000 to enable the Forest Service, with the approval and under the direction of the Secretary of Agriculture, to establish and maintain a forest experiment station at a suitable place in either the states of Michigan, Minnesota, or Wisconsin, to be selected by the Secretary of Agriculture, for the purpose of undertaking and conducting, in the forest regions of the Lake states, silviculture, dendrological, fire and other experiments and investigations, independently or in cooperation with other branches of the Federal Government, states, universities, colleges or individuals, to determine the best method for reforestation, protection, and growing of timber for pulp, lumber, and other purposes, and for the conservative management of forests, farm woodlands, and other forest lands. The Secretary of Agriculture is authorized to accept donations of lands in the Lake states for forest investigation and for the use of the experiment station. Any buildings which are necessary for carrying out the purposes of the act shall be erected at a cost not to exceed $3,000 for each building.

REVENUE

H. R. 10055. Introduced by Mr. Frear. Referred to the Committee on Ways and Means. (*Tax on gifts.*) This amendment to the revenue bill provides for a tax of one percent of the net value of every gift to any individual of the amount in excess of $1,000 and increases from one percent up to and including 25 percent of the amount in excess of $10,000,000. Any trusteeship or other agency created for the holding of or administration of any gift to any individual shall pay the same tax as if the gift was made direct. If more than one gift is made to the same grantee by the same grantor within the period of three years, the total amount shall be considered cumulative and subject to the highest rate of tax for such cumulative amount, subject to deductions for tax payments theretofore paid on any part of such amount.

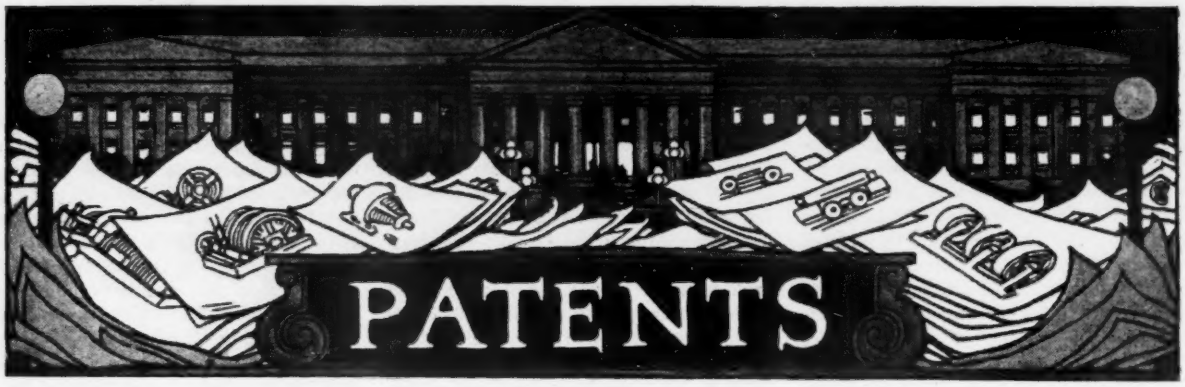
H. R. 10054. Introduced by Mr. Frear. Referred to the Committee on Ways and Means. (*Amending the revenue act, net estate tax.*) The bill provides for a graduated tax of from one percent on a net estate of not in excess of $50,000 up to and including 50 percent of the amount by which the net estate exceeds $30,000,000.

H. R. 10331. Introduced by Mr. Perlman. Referred to the Committee on Ways and Means. (*Net estate tax.*) This bill is substantially the same as H. R. 10054, with the exception that it imposes a tax of two percent on the amount of the net estate not to exceed 50 percent of the amount by which the net estate exceeds $10,000,000.

H. R. 10463. Introduced by Mr. Perlman. Referred to the Committee on Ways and Means. In effect, the bill seeks to amend the Internal Revenue act so as to provide an increase of the personal exemption of a single person from $1,000 to $1,500, and in the case of the head of a family or a married person living with husband or wife, a similar increase from $2,000 to $3,000, with the provision that a husband and wife living together shall receive but one personal exemption the amount of which shall be $3,000.

MINERAL LAND SURVEYING.—Revised and enlarged edition. By James Underhill, Ph. D., mining engineer and U. S. mineral surveyor for the State of Colorado. Flexibly bound; 237 pages; 43 figures. John Wiley and Sons, Inc., New York. $3.50 postpaid.

A comprehensive treatise on the survey and patenting of mineral land is embodied in the third edition of this valuable work, which has been revised to incorporate the practice of the present time. It describes methods in use in the surveying of mineral lands in the western part of the United States, and is designed for the use of mineral surveyors and students of mining engineering generally.



CONDUCTED BY JOHN BOYLE, JR.

1,399,746—*A. Campbell*, Chicago, Ill., December 13, 1921, assigned to Enterprise Railway Equipment Co.

ORE CAR having a large single discharge opening, the hopper sides and ends so arranged as to render the car self-clearing and to eliminate any crowding of the ore as it is being unloaded.

1,399,982—*R. C. Newhouse*, Milwaukee, Wis., December 13, 1921, assigned to Allis Chalmers Mfg. Co.

TUBE MILL for grinding ore in which the improvement consists in reconstructing installed tube mills to permit utilization of an efficient charge of heavy grinding bodies where the mill was primarily designed for operation with a charge of relatively light grinding bodies. In this particular instance iron balls are substituted for flint pebbles.

1,400,308—*D. D. Moffat*, Hayden, Ariz., December 13, 1921.

FLOTATION PROCESS consisting in distributing a flotation agent into air sufficiently to cause vaporization thereof and materially heat the resulting mixture and then forcing the same into the ore pulp so as to form a column of mineral bearing bubbles.

1,400,389-1,400,390—*R. E. Trottier*, Puteaux, France, December 13, 1921.

PROCESS AND APPARATUS FOR CLASSIFYING comprising supplying the ore in a still classifying medium, in obstructing the downward movement by an inclined surface, subjecting the material as it passes off the said surface to the action of an upwardly moving current travelling at an angle to the said surface, providing a downwardly extending outlet for the material which is able to pass through the upwardly moving current without being deviated thereby, providing an upwardly extending outlet for the material which is freely carried along by the upwardly moving current, providing an auxiliary downwardly extending outlet for the material which is unable to pass through the upwardly moving current when presented in one position to the said current but is able to pass therethrough when presented in another position to said current.

1,400,866-1,400,867—*A. Campbell*, Chicago, Ill., December 20, 1921, assigned to Enterprise Railway Equipment Co.

ORE CARS.

1,400,910—*R. H. Ransom, Jr.*, Newark, N. J., December 20, 1921.

HYDRAULIC JIG SEPARATOR which produces no suction or reverse flow of water through the mixture to be separated, which insures the application of the successive water impulses throughout the entire area of the mass, and thereby eliminates any dead spaces, so as to produce rapid and uniformly complete separation, the mechanism operating uniformly without intermittent strains.

1,400,962—*R. E. Leonard*, Los Angeles, Cal., December 20, 1921.

DRILLING OIL WELLS by continuously maintaining a pressure in excess of the hydrostatic pressure by a body of fluid filling the well without circulation on the well and reciprocating a cutting bit in the well.

1,401,055—*B. H. Dosenbach*, Butte, Mont., and *W. A. Scott*, Chicago, Ill., assigned to Minerals Separation, North American Corp., December 20, 1921.

FLOTATION PROCESS comprising introducing gaseous bubbles into a freely flowing pulp conducting said bubbles while submerged to a breaking down region, applying fluctuating gas pressure to said bubbles to break them and release the mineral adhering to them and collecting said mineral in said breaking down region.

1,401,129—*I. Billings*, Marial, Oreg., December 27, 1921.

MINER'S CARBIDE LAMP.

1,401,435—*T. H. Palmer*, Melbourne, Australia, and *H. V. Searle* and *R. D. Nevitt*, Broken Hill, New South Wales, Australia, December 27, 1921.

FLOTATION PROCESS using elemental sulphur dissolved in a solvent and added in proportion not in excess of one half of one per cent to ore, thereby separating one of such sulphides, the remainder of the ore being again submitted to flotation for the separation of another sulphide after adding a frothing agent.

1,401,535—*F. D. Gross, R. P. Akins*, and *J. W. Bucher*, Denver, Colo., December 27, 1921.

FLOTATION APPARATUS AND PROCESS which consists in successively isolating and commingling definite quantities of a froth producing mineral containing liquid and air to thoroughly commingle and aerate the same, thereafter directly releasing said definite quantities of aerating liquid below the surface of a body of similar liquid to effect frothing thereof.

1,401,593—*A. T. Drachenberg*, Gulf, Tex., December 27, 1921.

PROCESS OF MINING SULPHUR which comprises conducting an appropriate fusing medium into the formation containing the sulphur deposit and thereby melting the sulphur, and appropriately regulating the flow of said fusing medium upwardly through the formation by compressed gas forced into the formation above the discharge into the formation of said fusing medium.

1,401,598—*R. Gahl*, Miami, Ariz., December 27, 1921.

FLOTATION APPARATUS comprising a tank having a porous bottom impermeable to the downward passage therethrough of ore pulp, means for forcing gas therethrough, partitions subdividing the tank into compartments, said partitions extending to and being imperforate in immediate proximity to the bottom of the tank and provided with openings above said bottom, said openings being in such number as to cause the pulp to flow in an even stream.

1,401,733—*G. Rigg*, Melbourne, Australia, December 27, 1921, assigned to Mining and Metallurgical Processes Proprietary, Ltd.

DESULPHURIZATION OF ZINC SULPHIDE ORES consisting of subjecting the ore to a preliminary roast and then to a blast roast, the preliminary roast eliminating sulphur to such a degree that the blast roast produces a porous sinter.

1,401,759—*F. Cartlidge*, Claremont, N. H., December 27, 1921, assigned to Sullivan Machinery Co.

MINING MACHINE TRUCK having an improved and simplified loading and unloading member adapted to cooperate automatically with the truck and mining machine during the movement of the latter toward or from the truck and adapted to be readily adjusted toward or from its operative position and carried during transport in a convenient position on the truck.

1,401,769—*H. H. Godfrey*, Los Angeles, Cal., December 27, 1921.

APPARATUS FOR THE RECOVERY OF GOLD OR OTHER METAL from slimes, pulp or any electrolyte in aquaeous solution, means for subjecting the said solution to agitation while the electric current is passing therethrough, means for rapid elimination of the gas bubbles that accumulate on the surface of the anode and cathode, and means for adjusting the plane of the trough through which pulp passes under treatment.

Every Linde Warehouse is a Potential Linde Plant

The Linde Company has built a great business upon vision.

It sees in each of the forty-six Linde Warehouses now in operation not merely a distribution centre, but a producing plant—fully equipped to make Linde Oxygen.

Indeed with the exception of our original plant all of the twenty-nine Linde Plants which supply American consumers today were originally storage places.

Every warehouse is carefully located with a view to adequately meeting the needs of oxygen users as the use of the oxy-acetylene process develops in that territory.

It is such foresight that enables The Linde Company to provide a constantly increasing patronage with uniformly pure Linde Oxygen at any point, in any quantity and when wanted.

The nearest District Sales Office will gladly furnish you with complete information as to Linde prices and sales plans.

For Your Convenience

Distributing stations in every important industrial center.

At Your Service

District Sales Offices in these cities:

PITTSBURGH	CHICAGO	SAN FRANCISCO
BUFFALO	CLEVELAND	DALLAS
BOSTON	MILWAUKEE	ATLANTA
PHILADELPHIA	DETROIT	ST. LOUIS
	NEW YORK	

THE LINDE AIR PRODUCTS COMPANY

Carbide and Carbon Building, 30 East 42nd Street, New York

BALFOUR BUILDING, SAN FRANCISCO

THE LARGEST PRODUCERS OF OXYGEN IN THE WORLD

1750-22

BUYER'S DIRECTORY

ACID, SULPHURIC
Irvington Smelting & Refining Works, Irvington, N. J.

AERIAL TRAMWAYS
American Steel & Wire Co., Chicago and New York.

AERIAL TRAMWAY CABLE
Williamsport Wire Rope Co., 1301 Peoples Gas Bldg., Chicago, Ill.

AIR COMPRESSORS
Allis-Chalmers Mfg. Co., Milwaukee, Wis.
General Electric Co., Schenectady, N. Y.

AMALGAMATORS
Allis-Chalmers Mfg. Co., Milwaukee, Wis.
Mine Equipment & Supply Co., Denver, Colo.

APPLIANCES ENGINEERING
Lunkenhiemer Co., Cincinnati, Ohio.

ARMATURES
General Electric Co., Schenectady, N. Y.
Westinghouse Elec. & Mfg. Co., East Pittsburgh, Pa.

ASBESTOS PRODUCTS
Mikesell Bros. Co., 156 North La Salle St., Chicago, Ill.

ASSAYERS
Walter E. Burlingame, 1736 Lawrence St., Denver, Colo.
Indiana Laboratories Co., Hammond, Ind.
Pennsylvania Smelting Co., Pittsburgh, Pa.
Union Assay Office, Inc., Box 1446, Salt Lake City, Utah.

AUTOMATIC CAR CAGERS
Connellsville Mfg. & Mine Supply Co., Connellsville, Pa.

AUTOMATIC COAL SKIP
Roberts & Schaefer Co., McCormick Bldg., Chicago, Ill.

AUTOMATIC (Mine Doors, Truck and Electric Switches)
American Mine Door Co., Canton, Ohio.

BALL MILLS
Mine Equipment & Supply Co., Denver, Colo.

BATTERY-CHARGING EQUIPMENT
General Electric Co., Schenectady, N. Y.

BELTING (Conveyor, Elevator, Transmission)
Jeffery Mfg. Co., 958 N. Fourth Avenue, Columbus, Ohio.

BELTING, SILENT CHAIN
Morse Chain Co., Ithaca, N. Y.

BINS (Coke and Coal)
Jeffrey Mfg. Co., Columbus, Ohio.

BIT SHARPENERS
Denver Rock Drill Mfg. Co., Denver, Colo.
Ingersoll-Rand Co., 11 Broadway, New York City.

BLASTING POWDER
Hercules Powder Co., 934 King St., Wilmington, Del.

BLASTING SUPPLIES
Atlas Powder Company, Wilmington, Del.
du Pont Powder Co., The E. I., Wilmington, Del.
Giant Powder Co., Wilmington, Del.
Hercules Powder Co., 934 King St., Wilmington, Del.
National Fuse & Powder Co., Denver, Colo.

BLOWERS
General Electric Co., Schenectady, N. Y.

BLOWERS' CENTRIFUGAL
Ingersoll-Rand Co., 11 Broadway, New York City.

BOILER MOUNTINGS
Lunkenheimer Co., Cincinnati, Ohio.

BOILERS
Allis-Chalmers Mfg. Co., Milwaukee, Wis. (feed pump).
Mine Equipment & Supply Co., Denver, Colo.

BOXES, JOURNAL
J. R. Fleming & Son Co., Inc., Scranton, Penna.

BRATTICE CLOTH
Mikesell Brothers Co., 156 N. La Salle Street, Chicago, Ill.

BREAKERS (Construction and Machinery)
Jeffrey Mfg. Co., Columbus, Ohio.
Vulcan Iron Works, Wilkes-Barre, Pa.
Westinghouse Elec. & Mfg. Co., East Pittsburgh, Pa.
Wilmot Engineering Co., Hazleton, Pa.

BRIQUETTING MACH.
Jeffrey Mfg. Co., Columbus, Ohio.

BUCKETS (Elevator)
Hendrick Manufacturing Company, Carbondale, Penna.
Jeffrey Mfg. Co., Columbus, Ohio.
Stephens-Adamson Mfg. Co., Aurora, Ill.

CABLES (Connectors and Guides)
American Mine Door Co., Canton, Ohio.

CABLEWAYS
Jeffrey Mfg. Co., Columbus, Ohio.
Lidgerwood Mfg. Co., 96 Liberty St., New York City.

CAGES
Car-Dumper & Equipment Co., Chicago, Ill.
Connellsville Mfg. & Mine Supply Co., Connellsville, Pa.
Holmes & Bros., Robert, Inc., Danville, Ill.
Lidgerwood Mfg. Co., 96 Liberty St., New York City.

CAGE (Safety Appliances)
Connellsville Mfg. & Mine Supply Co., Connellsville, Pa.

CAR CONTROL AND CAGE EQUIPMENT
Car-Dumper & Equipment Co., Chicago, Ill.

CAR DUMPS
Car-Dumper & Equipment Co., Chicago, Ill.

CAR AND CAR WHEELS
Hockensmith Mine Car Co., Penn Station, Pa.
United Iron Works Co., Kansas City, Mo.
Watt Mining Car Wheel Co., Barnesville, Ohio.

CAR-HAULS
Car-Dumper & Equipment Co., Chicago, Ill.

CASTINGS
Jeffrey Mfg. Co., 958 N. Fourth Street, Columbus, Ohio.
The Lunkenheimer Co., Cincinnati, Ohio.
Mine Equipment & Supply Co., Denver, Colo.

CHAINS
Jeffrey Mfg. Co., Columbus, Ohio.
Morse Chain Co., Ithaca, N. Y.
Stephens-Adamson Mfg. Co., Aurora, Ill.

CHEMICALS
Roessler & Hasslacher Chemical Co., 709-717 Sixth Avenue, New York.

CHEMISTS
Walter E. Burlingame, 1736 Lawrence St., Denver, Colo.
Hunt, Robt., & Co., Insurance Exchange, Chicago, Ill.
Indiana Laboratories Co., Hammond, Ind.
Union Assay Office, Inc., Box 1446, Salt Lake City, Utah.

CIRCUIT BREAKERS
Automatic Reclosing Circuit Breaker Co., The, Columbus, O.
General Electric Co., Schenectady, N. Y.

CLAMPS (Trolley)
Ohio Brass Co., Mansfield, Ohio.

CLUTCHES
Connellsville Mfg. & Mine Supply Co., Connellsville, Pa.

COAL COMPANIES
Clinchfield Coal Corp., Dante, Va.
Lehigh Coal & Navigation Co., Philadelphia, Pa.
Stonega Coal & Coke Co., Philadelphia, Pa.
Thorne, Neale & Co., Philadelphia, Pa.
Wholesale Coal Co., Pittsburgh, Pa

COAL CRUSHERS
Connellsville Mfg. & Mine Supply Co., Connellsville, Pa.
Jeffrey Mfg. Co., Columbus, O.
Stephens-Adamson Mfg. Co., Aurora, Ill.

COAL CUTTERS
Goodman Mfg. Co., Chicago, Ill.
Jeffrey Mfg. Co., Columbus, Ohio.

COAL DRYING PLANTS
Roberts & Schaefer Co., McCormick Bldg., Chicago, Ill.

COAL HANDLING MACHINERY
Jeffrey Mfg. Co., Columbus, Ohio.
Lidgerwood Mfg. Co., 96 Liberty St., New York City.
Roberts & Schaefer Co., McCormick Bldg., Chicago, Ill.
Stephens-Adamson Mfg. Co., Aurora, Ill.
Watt Mining Car Wheel Co., Barnesville, Ohio.

COAL LOADING MACHINES
Myers-Whaley Company, Knoxville, Tenn.

COAL MINING MACHINERY
Allis-Chalmers Mfg. Co., Milwaukee, Wis.
Goodman Mfg. Co., Chicago, Ill.
Ingersoll-Rand Co., 11 Broadway, New York City.
Jeffrey Mfg. Co., Columbus, Ohio.
Roberts & Schaefer Co., McCormick Bldg., Chicago, Ill.

COAL MINE POWER PLANTS
Roberts & Schaefer Co., McCormick Bldg., Chicago, Ill.

COAL MINING PLANTS
Ingersoll-Rand Co., 11 Broadway, New York City.
Roberts & Schaefer Co., McCormick Bldg., Chicago, Ill.

COAL WASHING MACHINERY
Stephens-Adamson Mfg. Co., Aurora, Ill.

COAL WASHING PLANTS
Roberts & Schaefer Co., McCormick Bldg., Chicago, Ill.

COCKS (Locomotive, Cylinder and Gauge)
The Lunkenheimer Co., Cincinnati, Ohio.
Nicholson, W. H., & Co., Wilkes-Barre, Pa.

COILS (Choke)
General Electric Co., Schenectady, N. Y.

COMPRESSORS, AIR
General Electric Co., Schenectady N. Y.
Ingersoll-Rand Co., 11 Broadway, New York City.

CONCENTRATORS (Table)
Allis-Chalmers Mfg. Co., Milwaukee, Wis.
Mine Equipment & Supply Co · Denver, Colo.

CONCRETE REINFORCEMENT
American Steel & Wire Co., Chicago and New York.

CONDENSERS
Allis-Chalmers Mfg. Co., Milwaukee, Wis.
Ingersoll-Rand Co., 11 Broadway, New York City.
Westinghouse Elec. & Mfg. Co., East Pittsburgh, Pa.

CONSULTING ENGINEERS
Roberts & Schaefer Co., McCormick Bldg., Chicago, Ill.

CONTRACTORS
Roberts & Schaefer Co., McCormick Bldg., Chicago, Ill.

CONTROLLERS
General Electric Co., Schenectady, N. Y.
Goodman Manufacturing Co., Halsted St. and 48th Place, Chicago, Ill.
Westinghouse Elec. & Mfg. Co., East Pittsburgh, Pa.

CONVEYORS, BELT
Jeffrey Mfg. Co., 958 N. Fourth St., Columbus, Ohio.
Stephens-Adamson Mfg. Co., Aurora, Ill.

CONVEYORS, CHAIN FLIGHT
Jeffrey Mfg. Co., 958 N. Fourth St., Columbus, Ohio.
Wilmot Engineering Co., Hazleton, Pa.
Stephens-Adamson Mfg. Co., Aurora, Ill.

New York Engineering Company

SPECIALISTS IN

Gold and Tin Placer Engineering and Equipment

"EMPIRE"
Gold and Tin Dredges

"EMPIRE"
Prospecting Drills

PLACER
Mining Equipment

SLUICES, RIFFLES, PIPE LINES, GIANTS

Our factory, located at tidewater at Yonkers, N. Y., is most favorably located for export shipments by water as well as for domestic shipments via New York Central lines, and is within easy access of the raw materials markets. Our manufacturing facilities, coupled with our experience in placer fields the world over, enables us to render a service that is a guarantee of satisfaction

WRITE FOR THE CATALOGS

Office
2 Rector St.
New York

NEW YORK ENGINEERING COMPANY

Works
Yonkers,
N. Y.

O B Wheel and O-B Harp
(Patented)

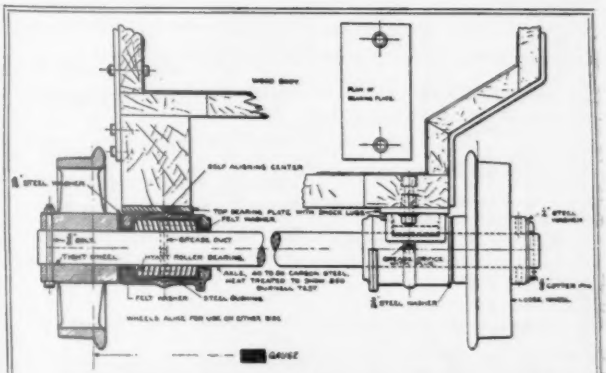
O-B Trolley Wheels and Harps Combine To Cut Costs

If you want to compare the price of a "run-o'-mine" wheel with O-B Trolley Wheel, divide the O-B price by two. For, as a rule, mines which use O B Wheels count on twice as much life from them as from the wheels they formerly used.

A good wheel needs a good harp.

O-B Harp pivots freely and trails easily. It helps straighten out the kinks in the trolley wire and gives the wheel a chance to deliver all the life there is in it.

THE OHIO BRASS COMPANY
MANSFIELD, OHIO, U. S. A.



FLEMING

Self-Aligning, Hyatt Roller-Bearing

Journal Boxes

Our Re-equipment Plan will interest you because it will save hundreds of dollars worth of your plain bearing wheels and axles from the scrap pile.

Let us tell you how much it will cost to re-equip with Hyatt Roller Bearings as applied with Fleming-Hyatt Self-Aligning Journal Boxes.

Let us re-equip a trial car—just mail a print or a few specifications of the car

J. R. FLEMING & SONS' CO.
SCRANTON, PA.

CONVEYORS, COAL
Jeffrey Mfg. Co., 958 N. Fourth St., Columbus, Ohio.
Lidgerwood Mfg. Co., 96 Liberty St., New York City.
Stephens-Adamson Mfg. Co., Aurora, Ill.

CONVEYORS AND ELEVATORS
Jeffrey Mfg. Co., Columbus, Ohio.
Stephens-Adamson Mfg. Co., Aurora, Ill.

CONVEYORS, PAN OR APRON
Jeffrey Mfg. Co., 958 N. Fourth St., Columbus, Ohio.
Stephens-Adamson Mfg. Co., Aurora, Ill.

CONVEYORS, PANS AND FLIGHTS
Hendrick Manufacturing Company, Carbondale, Pa.

CONVEYORS, SCREW
Jeffrey Mfg. Co., 958 N. Fourth St., Columbus, Ohio.
Stephens-Adamson Mfg. Co., Aurora, Ill.

COPPER ELECTROLYTIC
United Metals Selling Co., 42 Broadway, New York City.

COPPER WIRE
Anaconda Copper Mining Co., 111 W. Washington St., Chicago, Ill.

CORE DRILLING
H. R. Ameling Prospecting Co., St. Louis, Mo.
Hoffman Bros., Punxsutawney, Pa.

COUPLINGS
Nicholson, W. H., & Co., Wilkes-Barre, Pa.

CRUSHERS
Allis-Chalmers Mfg. Co., Milwaukee, Wis.
Jeffrey Mfg. Co., 958 N. Fourth St., Columbus, Ohio.
Mine Equipment & Supply Co., Denver, Colo.
Stephens-Adamson Mfg. Co., Aurora, Ill.
United Iron Works Co., Kansas City, Mo.

CRUSHERS, COAL
Connellsville Mfg. & Mine Supply Co., Connellsville, Pa.
Jeffrey Mfg. Co., 958 N. Fourth St., Columbus, Ohio.
Stephens-Adamson Mfg. Co., Aurora, Ill.
United Iron Works Co., Kansas City, Mo.

CRUSHING PLANTS, COKE
Jeffrey Mfg. Co., 958 N. Fourth St., Columbus, Ohio.

CYANIDE
American Cyanamid Co., New York, N. Y.
Roessler and Hasslacher Chemical Company, 709 Sixth Avenue, New York City.

DESIGNERS OF PLANTS
Jeffrey Mfg. Co., 958 N. Fourth St., Columbus, Ohio.
Mine Equipment & Supply Co., Denver, Colo.
Roberts & Schaefer Co., McCormick Bldg., Chicago, Ill.

DIAMOND CORE DRILL CONTRACTING
H. R. Ameling Prospecting Co., Rolla, Mo.
Hoffman Bros., Punxsutawney, Pa.

DOORS, AUTOMATIC MINE
American Mine Door Co., Canton, Ohio

DRAG LINES
Denver Rock Drill Mfg. Co., Denver, Colo.
Williamsport Wire Rope Co., Gen. Sales Office, 1301 Peoples Gas Bldg., Chicago, Ill.

DREDGES, GOLD AND TIN
New York Engineering Co., 2 Rector St., New York City.

DRIFTERS, DRILL
Denver Rock Drill Mfg. Co., Denver, Colo.
Ingersoll-Rand Co., New York City.

DRILLS, AIR & STEAM
Ingersoll-Rand Co., 11 Broadway, New York City.

DRILLS (Blast Hole)
Denver Rock Drill Mfg. Co., Denver, Colo.
Ingersoll-Rand Co., New York City.

DRILLS, CORE
H. R. Ameling Prospecting Co., Rolla, Mo.
Hoffman Bros., Punxsutawney, Pa.
Ingersoll-Rand Co., New York City.

DRILLS, ELECTRIC
General Electric Co., Schenectady, N. Y.
Ingersoll-Rand Co., New York City.
Jeffrey Mfg. Co., 958 N. Fourth St., Columbus, Ohio.
Union Electric Co., Pittsburgh, Pa.

DRILLS, HAMMER
Denver Rock Drill Mfg. Co., Denver, Colo.
Ingersoll-Rand Co., New York City.

DRILLS (Hand Operated Coal)
Ohio Brass Co., Mansfield, Ohio.
Ingersoll-Rand Co., New York City.

DRILLS, PNEUMATIC
Denver Rock Drill Mfg. Co., Denver, Colo.
Ingersoll-Rand Co., New York City.

DRILLS, PROSPECTING
H. R. Ameling Prospecting Co., Rolla, Mo.
Hoffman Bros., Punxsutawney, Pa.
Ingersoll-Rand Co., 11 Broadway, New York City.
New York Engineering Co., 2 Rector St., New York City.

DRILLS, ROCK
Denver Rock Drill Mfg. Co., Denver, Colo.
General Electric Co., Schenectady, N. Y.
Ingersoll-Rand Co., New York City.
Union Electric Co., Pittsburgh, Pa.

DRILL STEEL SHARPENERS
Denver Rock Drill Mfg. Co., Denver, Colo.

DRIVES, SILENT CHAIN
Morse Chain Co., Ithaca, N. Y.

DRUMS (Hoisting, Haulage)
Connellsville Mfg. & Mine Supply Co., Connellsville, Pa.

DRYERS, ORE
Allis-Chalmers Mfg. Co., Milwaukee, Wis.

DUMPERS, ROTARY
Car-Dumper & Equipment Co., Chicago, Ill.

DUMP CARS
Connellsville Mfg. & Mine Supply Co., Connellsville, Pa.

DYNAMITE
Atlas Powder Co., Wilmington, Del.
du Pont Powder Co., The E. I. Wilmington, Del.
Hercules Powder Co., 934 King St., Wilmington, Del.
Giant Powder Co., Wilmington, Del.
National Fuse & Powder Co., Denver, Colo

DYNAMOS
General Electric Co., Schenectady, N. Y.
Goodman Mfg. Co., Forty-eighth Place and Halsted St., Chicago, Ill.
Westinghouse Elec. & Mfg. Co., East Pittsburgh, Pa.

EJECTORS
The Lunkenheimer Co., Cincinnati, Ohio.

ELECTRICAL APPARATUS
Allis-Chalmers Mfg. Co., Milwaukee, Wis.
General Electric Co., Schenectady, N. Y.
Westinghouse Elec. & Mfg. Co., East Pittsburgh, Pa.

ELECTRIC HOISTING MACHINERY
Jeffrey Mfg. Co., 958 N. Fourth St., Columbus, Ohio.

ELECTRIC LOCOMOTIVES
General Electric Co., Schenectady, N. Y.
Goodman Mfg. Co., Forty-eighth Place and Halsted St., Chicago, Ill.
Jeffrey Mfg. Co., 958 N. Fourth St., Columbus, Ohio.
Ohio Brass Co., Mansfield, Ohio.
Westinghouse Elec. & Mfg. Co., East Pittsburgh, Pa.

ELECTRIC MINE SUPPLIES
General Electric Co., Schenectady, N. Y.
Ohio Brass Co., Mansfield, Ohio.

ELECTRICAL SUPPLIES
General Electric Co., Schenectady, N. Y.
Union Electric Co., Pittsburgh, Pa.
Westinghouse Elec. & Mfg. Co., East Pittsburgh, Pa.

ELEVATORS
Jeffrey Mfg. Co., 958 N. Fourth St., Columbus, Ohio.
Stephens-Adamson Mfg. Co., Aurora, Ill.

ELEVATORS, BUCKET
Jeffrey Mfg. Co., 958 N. Fourth St., Columbus, Ohio.
Stephens-Adamson Mfg. Co., Aurora, Ill.

ELEVATOR CABLES
Williamsport Wire Rope Co., 1301 Peoples Gas Bldg., Chicago, Ill.

ELEVATOR MACHINERY
Jeffrey Mfg. Co., 958 N. Fourth St., Columbus, Ohio.
Stephens-Adamson Mfg. Co., Aurora, Ill.

ELIMINATORS
Nicholson, W. H. & Co. Wilkes-Barre, Pa.

ENGINE TRIMMINGS
The Lunkenheimer Co., Cincinnati, Ohio.

ENGINEERING APPLIANCES
The Lunkenheimer Co., Cincinnati, Ohio.

ENGINES
Lidgerwood Mfg. Co., 96 Liberty St., New York City.

ENGINES, GAS AND GASOLINE
Allis-Chalmers Mfg. Co., Milwaukee, Wis.
Mine Equipment & Supply Co., Denver, Colo.

ENGINES (Hoisting and Hauling)
Connellsville Mfg. & Mine Supply Co., Connellsville, Pa.

ENGINES, OIL
Allis-Chalmers Mfg. Co., Milwaukee, Wis.
Ingersoll-Rand Co., 11 Broadway, New York City.
Mine Equipment & Supply Co., Denver, Colo.
Westinghouse Elec. & Mfg. Co., East Pittsburgh, Pa.

ENGINES, STEAM
Allis-Chalmers Mfg. Co., Milwaukee, Wis.

ENGINEERS
H. R. Ameling Prospecting Co., Rolla, Mo.
Hunt, Robert & Co., Insurance Exchange, Chicago, Ill.
Indiana Laboratories Co., Hammond, Ind.
Jeffrey Mfg. Co., 958 N. Fourth St., Columbus, Ohio.
Roberts & Schaefer Co., McCormick Bldg., Chicago, Ill.

EXPLOSIVES
Atlas Powder Co., Wilmington, Del.
Du Pont Powder Co., Wilmington, Del.
Giant Powder Co., Wilmington, Del
Hercules Powder Co., 934 King St., Wilmington, Del.
National Fuse & Powder Co., Denver, Colo.

FANS, VENTILATING
Connellsville Mfg. & Mine Supply Co., Connellsville, Pa.
General Electric Co., Schenectady, N. Y.
Jeffrey Mfg. Co., 958 N. Fourth St., Columbus, Ohio.
Vulcan Iron Works, Wilkes-Barre, Pa.
Westinghouse Elec., & Mfg. Co., East Pittsburgh, Pa.

FEEDERS, ORE
Jeffrey Mfg. Co., 958 N. Fourth St., Columbus, Ohio.
Stephens-Adamson Mfg. Co., Aurora, Ill.

FILTER CLOTH METALLIC
United Filters Corpn., 65 Broadway, New York City.

FILTERS, PRESSURE AND CONTINUOUS
United Filters Corpn., 65 Broadway, New York City.

FILTERS (Water)
Wm. B. Scaife & Sons Co., Oakmont, Pa.

FLOTATION OILS
Hercules Powder Co., 934 King St., Wilmington, Del.

FLOW METERS
General Electric Co., Schenectady, N. Y.

FORGINGS
Allis-Chalmers Mfg. Co., Milwaukee, Wis.
James H. Channon Mfg. Co., 227 W. Erie St., Chicago, Ill.
Mine Equipment & Supply Co., Denver, Colo.

FORGED STEEL BALLS
Mine Equipment & Supply Co., Denver, Colo.

FROGS AND SWITCHES
Central Frog & Switch Co., Cincinnati, Ohio.

FURNACES, MECHANICAL ROASTING
Allis-Chalmers Mfg. Co., Milwaukee, Wis.

GASKETS
Mikesell Bros. Co., 156 N. La Salle St., Chicago, Ill.

GEARS
General Electric Co., Schenectady, N. Y.
Jeffrey Mfg. Co., Columbus, Ohio.
Stephens-Adamson Mfg. Co., Aurora, Ill.
Westinghouse Elec. & Mfg. Co., East Pittsburgh, Pa.

GEARS, SILENT CHAIN
Morse Chain Co., Ithaca, N. Y.

GENERATORS AND GENERATING SETS
Allis-Chalmers Mfg. Co., Milwaukee, Wis.
General Electric Co., Schenectady, N. Y.

GRINDING BALLS
Mine Equipment & Supply Co., Denver, Colo.

GUY LINES
Williamsport Wire Rope Co., 1301 Peoples Gas Bldg., Chicago, Ill.

HANGERS (Insulated Trolley)
Ohio Brass Co., Mansfield, Ohio.

ACCURATE WEIGHTS

May Mean the Difference Between Profit and Loss

No weighing device has ever proved more satisfactory than the old-fashioned beam scale when time can be taken by a reliable and skilled man to bring it to a perfect balance. But time is not always available, nor is the man in charge of weighing always reliable and skilled. And the weigher can make mistakes detrimental to your interests as well as against the miners.

The Streeter-Amet Automatic Weight Recorder removes all possibility of error in weighing by eliminating the human element from the weighing operation and by automatically printing on a paper tape the weight of each load passing over the scale.

With platform scales of proper length, cars need not be stopped, but can be accurately weighed while moving at a speed of three to four miles per hour.

Where weighing is done in hopper or weigh-pan the recorder can take care of the loads as fast as cars are brought up.

Send for catalogues and data on representative installations

STREETER-AMET WEIGHING AND RECORDING COMPANY

4101-4105 RAVENSWOOD AVE., CHICAGO

Hockensmith Wheel and Mine Car Co.

(Pittsburgh District) Penns Station, Pa.

Manufacturers of

Chilled Annealed Mine Car Wheels

Self-Oiling Roller Bearing

Angle Bar Trucks

The Truck for Severe Service

Mine Cars

Steel——Composite——Wood

Awarded Gold Medal Panama-Pacific Exposition for Mine Cars, Wheels and Oiling System

Catalogue "M" upon request

For Economy Use Hercules Flotation Oil

Some advantages of Hercules flotation oil:

1. Every shipment is uniform.
2. It is economical—because it recovers a high percentage of concentrate from every ton of ore.

We are prepared to put at your service an unlimited, dependable supply of uniform pine oil, made under strict chemical control, *to meet your needs.*

We invite correspondence from those who are interested.

Naval Stores Division

HERCULES POWDER CO.

Wilmington Delaware

Sales Offices: 120 Broadway, New York; 332 S. Michigan Ave., Chicago; 1012 Chronicle Bldg., San Francisco; 1019 Kearns Bldg., Salt Lake City, Utah

HERCULES Pine Oil

Produced Under Chemical Control

HEADLIGHTS, ARC AND INCANDESCENT
General Electric Co., Schenectady, N. Y.
Ohio Brass Co., Mansfield, Ohio.

HOISTS, ELECTRIC
Allis-Chalmers Mfg. Co., Milwaukee, Wis.
Connellsville Mfg. & Mine Supply Co., Connellsville, Pa.
Lidgerwood Mfg. Co., 96 Liberty St., New York City.
Roberts & Schaefer Co., McCormick Bldg., Chicago, Ill.
Vulcan Iron Works, Wilkes-Barre, Pa.

HOISTS, PORTABLE
Ingersoll-Rand Co., 11 Broadway, New York City.
Lidgerwood Mfg. Co., 96 Liberty St., New York City.
Stephens-Adamson Mfg. Co., Aurora, Ill.

HOISTS, STEAM
Allis-Chalmers Mfg. Co., Milwaukee, Wis.
Connellsville Mfg. & Mine Supply Co., Connellsville, Pa.
Ingersoll-Rand Co., 11 Broadway, New York City.
Lidgerwood Mfg. Co., 96 Liberty St., New York City.
United Iron Works Co., Kansas City, Mo.
Vulcan Iron Works, Wilkes-Barre, Pa.

HOISTS (Room & Gathering)
Connellsville Mfg. & Mine Supply Co., Connellsville, Pa.
Holmes, Robert & Bros., Inc., Danville, Ill.
Lidgerwood Mfg. Co., 96 Liberty St., New York City.

HOISTING ROPES
Connellsville Mfg. & Mine Supply Co., Connellsville, Pa.

HOSE, AIR & STEAM
Ingersoll-Rand Co., 11 Broadway, New York City.

HYDRAULIC MACHINERY
Allis-Chalmers Mfg. Co., Milwaukee, Wis.
Car-Dumper & Equipment Co., Chicago, Ill.

INDUSTRIAL HOUSING
General Electric Co., Schenectady, N. Y.

INJECTORS
The Lunkenheimer Co., Cincinnati, Ohio.

INSTRUMENTS, ELECTRICAL
General Electric Co., Schenectady, N. Y.

INSULATING MATERIAL, ELECTRIC
General Electric Co., Schenectady, N. Y.
Mikesell Bros. Co., 156 N. La Salle St., Chicago, Ill.

INSULATING TAPE AND CLOTH
General Electric Co., Schenectady, N. Y.
Mikesell Bros. Co., 156 N. La Salle St., Chicago, Ill.

INSULATORS, FEEDER WIRE
General Electric Co., Schenectady, N. Y.
Ohio Brass Co., Mansfield, Ohio.
Westinghouse Elec. & Mfg. Co., East Pittsburgh, Pa.

INSULATORS, SECTION
General Electric Co., Schenectady, N. Y.
Ohio Brass Co., Mansfield, Ohio.
Westinghouse Elec. & Mfg. Co., East Pittsburgh, Pa.

INSULATORS (Porcelain)
General Electric Co., Schenectady, N. Y.
Ohio Brass Co., Mansfield, Ohio.
Westinghouse Elec. & Mfg. Co., East Pittsburgh, Pa.

INSULATORS (Third Rail)
General Electric Co., Schenectady, N. Y.
Ohio Brass Co., Mansfield, Ohio.

INSULATORS (Trolley)
General Electric Co., Schenectady, N. Y.
Ohio Brass Co., Mansfield, Ohio.

INSULATED WIRE AND CABLE
American Steel & Wire Co., Chicago, Ill.
Roebling Sons, John A., Trenton, N. J.
Williamsport Wire Rope Co., Gen. Sales Office, 1301 Peoples Gas Bldg., Chicago, Ill.

JIGS
Mine Equipment & Supply Co., Denver, Colo.

JOURNAL BOXES
J. R. Fleming & Son Co., Inc., Scranton, Penna.

KILNS (Rotary)
Allis-Chalmers Mfg. Co., Milwaukee, Wis.

KILNS (Rotary Ore Nodulizers)
Allis-Chalmers Mfg. Co., Milwaukee, Wis.

LAMPS, ARC AND INCANDESCENT
General Electric Co., Schenectady, N. Y.
Westinghouse Elec. & Mfg. Co., East Pittsburgh, Pa.

LAMPS (Carbon)
General Electric Co., Schenectady, N. Y.

LAMPS, ELECTRIC
General Electric Co., Schenectady, N. Y.
Westinghouse Elec. & Mfg. Co., East Pittsburgh, Pa.

LEAD ORES
American, Zinc, Lead & Smelting Co., 1012 Pierce Bldg., St. Louis, Mo.

LIGHTNING ARRESTERS
General Electric Co., Schenectady, N. Y.

LOADING BOOMS
Connellsville Mfg. & Mine Supply Co., Connellsville, Pa.
Jeffrey Mfg. Co., Columbus, Ohio.
Roberts & Schaefer Co., McCormick Bldg., Chicago, [illegible]

LOADING MACHINES
Connellsville Mfg. & Mine Supply Co., Connellsville, Pa.
Myers-Whaley Company, Knoxville, Tenn.

LOCOMOTIVE COALING STATIONS
Roberts & Schaefer Co., McCormick Bldg., Chicago, Ill.

LOCOMOTIVES, ELECTRIC
General Electric Co., Schenectady, N. Y.
Goodman Mfg. Co., Chicago, Ill.
Ironton Engine Co., Ironton, Ohio.
Jeffrey Mfg. Co., 958 N. Fourth St., Columbus, Ohio.
Mancha Storage Battery Locomotive Co., St. Louis, Mo.
Westinghouse Elec. & Mfg. Co., East Pittsburgh. Pa.

LOCOMOTIVES, GASOLINE
Mine Equipment & Supply Co., Denver, Colo.
Vulcan Iron Works, Wilkes-Barre, Pa.

LOCOMOTIVES, RACK RAIL
Goodman Mfg. Co., Chicago, Ill.

LOCOMOTIVES, STEAM
Vulcan Iron Works, Wilkes-Barre, Pa.

LOCOMOTIVES, STORAGE BATTERY
General Electric Co., Schenectady, N. Y.
Goodman Mfg. Co., Chicago, Ill.
Ironton Engine Co., Ironton, Ohio.
Jeffrey Mfg. Co., 958 N. Fourth St., Columbus, Ohio.
Mancha Storage Battery Locomotive Co., St. Louis, Mo.
Westinghouse Elec. & Mfg. Co., East Pittsburgh, Pa.

MACHINERY, TRANSMISSION (Power)
Morse Chain Co., Ithaca, N. Y.

MICA
Mikesell Bros. Co., 156 N. La Salle St., Chicago, Ill.

MILLS, BALL
Mine Equipment & Supply Co., Denver, Colo.

MILLS, STAMP
Allis-Chalmers Mfg. Co., Milwaukee, Wis.
Mine Equipment & Supply Co., Denver, Colo.

MINE CAR TRUCKS
J. R. Fleming & Son Co., Inc., Scranton, Penna.

MINE DOORS, AUTOMATIC
American Mine Door Co., Canton, Ohio.

MINING CABLES
Williamsport Wire Rope Co., 1301 Peoples Gas Bldg., Chicago, Ill.

MINING MACHINES
Goodman Mfg. Co., Forty-eighth Place and Halsted St., Chicago, Ill.

MINING MACHINES CHAIN AND PUNCHER
Goodman Mfg. Co., Forty-eighth Place and Halsted St., Chicago, Ill.
Jeffrey Mfg. Co., 958 N. Fourth St., Columbus, Ohio.

MINING MACHINES (Electric)
General Electric Co., Schenectady, N. Y.
Goodman Mfg. Co., Chicago, Ill.
Jeffrey Mfg. Co., 958 N. Fourth St., Columbus, Ohio.
Westinghouse Elec. & Mfg. Co., East Pittsburgh, Pa.

MINING MACHINERY
Denver Rock Drill Mfg. Co., Denver, Colo.
Mine Equipment & Supply Co., Denver, Colo.

MINE CAR HITCHINGS
Hockensmith Wheel & Mine Car Co., Penn Station, Pa.

MINE CAR TRUCKS
Hockensmith Wheel & Mine Car Co., Penn Station, Pa.

MINE SIGNALS
American Mine Door Co., Canton, Ohio.

MINE SUPPLIES
Mine Equipment & Supply Co., Denver, Colo.

MINING EQUIPMENT
Allis-Chalmers Mfg. Co., Milwaukee, Wis.
General Electric Co., Schenectady, N. Y.

MOTOR CONTROL APPARATUS
General Electric Co., Schenectady, N Y.

MOTORS
General Electric Co., Schenectady, N. Y.
Goodman Mfg. Co., Chicago, Ill.
Westinghouse Elec. & Mfg. Co., East Pittsburgh, Pa.

MOUNTINGS, BOILER
The Lunkenheimer Co , Cincinnati, Ohio.

NODULIZERS, ORE
Allis-Chalmers Mfg. Co., Milwaukee, Wis.

ORE, BUYERS AND SELLERS OF
Irvington Smelting & Refining Works, Irvington, N. J.
Phelps-Dodge Corporation, New York City.

ORE CRUSHERS
Mine Equipment & Supply Co., Denver, Colo.

ORE FEEDERS
Mine Equipment & Supply Co., Denver, Colo.

ORE SAMPLERS
Indiana Laboratories Co., Hammond, Ind.

PERFORATED METALS
Chicago Perforating Co., Chicago, Ill.

PERMISSIBLES, Explosives
Atlas Powder Co., Wilmington, Del.
du Pont Powder Co., The E. I., Wilmington, Del.
Giant Powder Co., Wilmington, Del.
Hercules Powder Co., Wilmington Del.

PICKING TABLES
Jeffrey Mfg. Co., 958 N. Fourth St., Columbus, Ohio.
Roberts & Schaefer Co., McCormick Bldg., Chicago, Ill.
Stephens-Adamson Mfg. Co., Aurora, Ill.

PIG LEAD
Pennsylvania Smelting Co., Pittsburgh, Penna.
United Metals Selling Co., 42 Broadway, New York City.

PIPE, CAST IRON
Hockensmith Mine Car Co., Penn Station, Pa.

PIPE COVERINGS
Mikesell Bros. Co., 156 N. La Salle St., Chicago, Ill.

PIPE (Wood)
Connellsville Mfg. & Mine Supply Co., Connellsville, Pa.

PNEUMATIC TOOL
Ingersoll-Rand Co., 11 Broadway, New York City.

POWDER, BLASTING
Atlas Powder Co., Wilmington, Del.
du Pont Powder Co., The E. I., Wilmington, Del.
Giant Powder Co., Wilmington, Del.
Hercules Powder Co., 934 King St., Wilmington, Del.

POWER SHOVELS
Myers-Whaley Company, Knoxville, Tenn.

POWER TRANSMISSION MACHINERY
Allis-Chalmers Mfg. Co., Milwaukee, Wis.
Stephens-Adamson Mfg. Co., Aurora, Ill.

LUNKENHEIMER
Valves and Engineering Appliances

SERVICE, resistance to wear, their *permanence* in the line recommends them particularly for use on Power Equipment. Globe, Angle and Cross; Gate; Check; Pop Safety and Relief; Throttle and Safety Non-return Valves. Engine Trimmings, Automotive Accessories, etc.

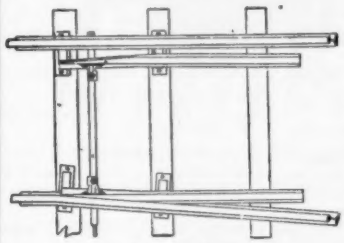
Write for Catalog No. 58-H.

THE LUNKENHEIMER CO.
"QUALITY"
LARGEST MANUFACTURERS OF HIGH GRADE ENGINEERING SPECIALTIES IN THE WORLD
NEW YORK CHICAGO CINCINNATI BOSTON LONDON
EXPORT DEPT. 129-139 LAFAYETTE ST., NEW YORK 32-28-8

John A. Roebling's Sons Co.
TRENTON, NEW JERSEY.

CENTRAL
MINE TRACK EQUIPMENT

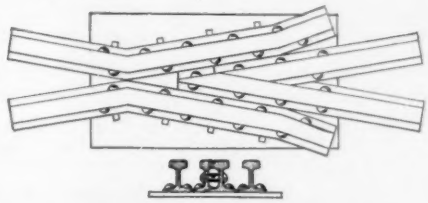
Instead of using 18 to 30-inch latches hammered out of square iron, in your blacksmith shop, use these long latches, cut from standard section rail and carefully planed to the correct shape. Keep your cars on the track—not in the ditch.



Split Switch

Frogs, too, are a prolific source of trouble to the mine manager. Despite the most careful hand work, if constructed in the ordinary way, they get out of line.

CENTRAL frogs are permanently riveted to heavy steel plates.

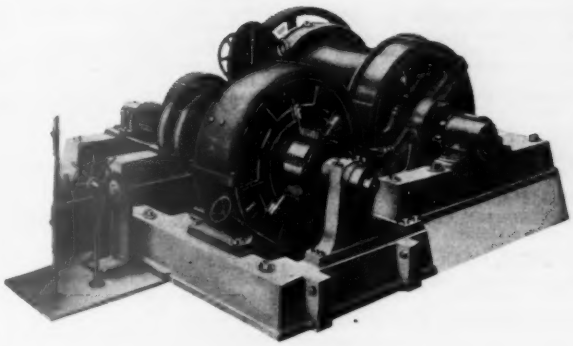


Riveted Plate Frog

THE CENTRAL FROG & SWITCH CO.
CINCINNATI, OHIO

The Connellsville Manufacturing and Mine Supply Company

Connellsville, Pa.



If you need any cost reducing mine equipment, write us.

The Cage, Hoist and Fan Builders

Irvington Smelting and Refining Works

Buyers, Smelters and Refiners of
Gold, Silver, Lead, Copper and Platinum Ores, Sweeps and Bullion

Manufacturers of Copper Sulphate

IRVINGTON :-: NEW JERSEY

NEW YORK OFFICE—Charles Engelhard
Hudson Terminal Building 30 Church Street

CORE DRILLING

H. R. AMELING PROSPECTING COMPANY, INC.

Diamond Drill Contractors
20 Years' Continuous Service
Not a Dissatisfied Customer

ROLLA, MISSOURI

Home: State Geologic Survey, Missouri School of Mines

PRESSES
United Filters Corpn., 65 Broadway. New York City.

PROSPECTING DRILLS
H. R. Ameling Prospecting Co., Rolla, Mo.
Hoffman Bros., Punxsutawney, Pa.
Ingersoll-Rand Co., 11 Broadway, New York City.

PULVERIZERS, COAL AND COKE
Jeffrey Mfg. Co., 958 N. Fourth St., Columbus, Ohio.

PUMPS, CENTRIFUGAL
Allis-Chalmers Mfg. Co., Milwaukee, Wis.
Ingersoll-Rand Co., 11 Broadway, New York City.
United Iron Works Co., Kansas City, Mo.

PUMPS, MINE
Connellsville Mfg. & Mine Supply Co., Connellsville, Pa.
Ingersoll-Rand Co., 11 Broadway, New York City.
United Iron Works, Kansas City, Mo.

PUMPS (Electric)
Connellsville Mfg. & Mine Supply Co., Connellsville, Pa.

PUMPS (Gathering or Dip)
Connellsville Mfg. & Mine Supply Co., Connellsville, Pa.

PUMPS, PNEUMATIC AIR LIFT
Ingersoll-Rand Co., 11 Broadway, New York City.

PUMPS, POWER
Connellsville Mfg. & Mine Supply Co., Connellsville, Pa.
General Electric Co., Schenectady, N. Y.
Ingersoll-Rand Co., 11 Broadway, New York City.

PUMPS, SAND
Ingersoll-Rand Co., 11 Broadway, New York City.

PUMPS, STEAM
Ingersoll-Rand Co., 11 Broadway, New ork City.

PUMPS, VACUUM
Ingersoll-Rand Co., 11 Broadway, New York City.

QUARRYING MACHINERY
Ingersoll-Rand Co., 11 Broadway, New York City.

RAIL BONDS
American Steel & Wire Co., Chicago and New York.
General Electric Co., Schenectady, N. Y.
Ohio Brass Co., Mansfield, Ohio.

RAILWAY SUPPLIES
James H. Channon Mfg. Co., 227 W. Erie St., Chicago, Ill.
General Electric Co., Schenectady, N. Y.
Ohio Brass Co., Mansfield, Ohio.

ROCK CRUSHERS
Mine Equipment & Supply Co., Denver, Colo.

ROCK DRILLS
Denver Rock Drill Mfg. Co., Denver, Colo.
General Electric Co., Schenectady, N. Y.

RODS, COPPER, HOT ROLLED
Anaconda Copper Mining Co., Rolling Mills Dept., 111 W. Washington St., Chicago, Ill.

ROLLING MILL MACHINERY
Allis-Chalmers Mfg. Co., Milwaukee, Wis.

ROPE, TRANSMISSION
American Steel & Wire Co., Chicago and New York.
Roebling Sons, John A., Trenton, N. J.
Williamsport Wire Rope Co., Gen. Sales Office, 1301 Peoples Gas Bldg., Chicago, Ill.

ROPE, WIRE
American Steel & Wire Co., Chicago and New York.
James H. Channon Mfg. Co., 227 W. Erie St., Chicago, Ill.
Roebling Sons, John A., Trenton, N. J.
Williamsport Wire Rope Co., Gen. Sales Office, 1301 Peoples Gas Bldg., Chicago, Ill.

ROTARY DUMPS
Car-Dumper & Equipment Co., Chicago, Ill.

SAFETY APPLIANCES, MINE
Connellsville Mfg. & Mine Supply Co., Connellsville, Pa.

SAMPLERS OF ORE
Indiana Laboratories Co., Hammond, Ind.

SCRAPER LOADERS
Goodman Manufacturing Co., Halsted St. and 48th Place, Chicago, Ill.

SCREENS
Hendrick Mfg. Co., Carbondale, Pa.
Roberts & Schaefer Co., McCormick Bldg., Chicago, Ill.

SCREENS (Gravity)
Stephens-Adamson Mfg. Co., Aurora, Ill.

SCREENS AND PERFORATED SHEETING
Allis-Chalmers Mfg. Co., Milwaukee, Wis.
Chicago Perforating Co., Chicago, Ill.
Hendrick Mfg. Co., Carbondale, Pa.
Holmes & Bros., Inc., Robert, Danville, Ill.
Jeffery Mfg. Co., 958 N. Fourth St., Columbus, Ohio.

SCREENS, REVOLVING
Chicago Perforating Co., Chicago, Ill.
Hendrick Mfg. Co., Carbondale, Pa.
Stephens-Adamson Mfg. Co., Aurora, Ill.

SEARCHLIGHTS
General Electric Co., Schenectady, N. Y.

SEPARATORS (Steam)
Nicholson & Co., W. H., Wilkes-Barre, Pa

SHARPENERS, DRILL
Ingersoll-Rand Co., 11 Broadway, New York City.

SHOVELS
Myers-Whaley Company, Knoxville, Tenn.

SHOVELS (Steam, Gas and Electric)
Myers-Whaley Company, Knoxville Tenn.

SINKERS, ROCK DRILL
Denver Rock Drill Mfg. Co., Denver, Colo.

SKIPS
Connellsville Mfg. & Mine Supply Co., Connellsville, Pa.
Roberts & Schaefer Co., McCormick Bldg., Chicago, Ill.

SMELTERS
Irvington Smelting & Refining Works, Irvington, N. J.

"SOLIDCAR" SELF-DUMPING CAGES
Car-Dumper & Equipment Co., Chicago, Ill.

SPLICE, CABLE
American Mine Door Co., Canton, Ohio.
Ohio Brass Co., Mansfield, Ohio.

SPLICE, INSULATOR
American Mine Door Co., Canton. Ohio.

SPLICE, TROLLEY WIRE
American Mine Door Co., Canton, Cincinnati, Ohio.
General Electric Co., Schenectady, N. Y.
Ohio Brass Co., Mansfield, Ohio.
Union Electric Co., Pittsburgh Pa.

SPROCKETS, SILENT CHAIN
Morse Chain Co., Ithaca, N. Y.

STANDARD HOISTING CABLES
Williamsport Wire Rope Co., 1301 Peoples Gas Bldg., Chicago, Ill.

STEEL, REINFORCING
American Mine Door Co., Canton, Ohio.

STOPERS, ROCK DRILL
Denver Rock Drill Mfg. Co., Denver, Colo.

STORAGE BATTERIES, LOCOMOTIVES
General Electric Co., Schenectady, N. Y.
Ironton Engine Company, Ironton, Ohio.
Mancha Storage Locomotive Co., St. Louis, Mo.

SUSPENSION BRIDGE CABLES
Williamsport Wire Rope Co., 1301 Peoples Gas Bldg., Chicago, Ill.

SWITCHBOARDS, POWER
General Electric Co., Schenectady, N. Y.
Westinghouse Elec. & Mfg. Co., East Pittsburgh, Pa.

SWITCHBOARDS, TELEPHONE
Allis-Chalmers Mfg. Co., Milwaukee, Wis.

SWITCHES (Disconnecting and Electric)
General Electric Co., Schenectady, N. Y.

SWITCHES, FROGS AND CROSSINGS
Central Frog & Switch Co., Cincinnati, Ohio.
Union Electric Co., Pittsburgh, Pa.

SWITCHES AND FROGS, TROLLEY
American Mine Door Co., Canton, Ohio.
Electric Railway Equipment Co., Cincinnati, Ohio.
General Electric Co., Schenectady, N. Y.
Ohio Brass Co., Mansfield, Ohio.
Union Electric Co., Pittsburgh, Pa.

SWITCHING CABLES
Williamsport Wire Rope Co., 1301 Peoples Gas Bldg., Chicago, Ill.

TIPPLES
Roberts & Schaefer Co., McCormick Bldg., Chicago, Ill.

TIPPLE DESIGNERS
Roberts & Schaefer Co., McCormick Bldg., Chicago, Ill.

TIPPLE EQUIPMENT
Jeffrey Mfg. Co., 958 N. Fourth St., Columbus, Ohio.
Roberts & Schaefer Co., McCormick Bldg., Chicago, Ill.
Stephens-Adamson Mfg. Co., Aurora. Ill.

TRACKS, PORTABLE, RAIL, ETC.
Central Frog & Switch Co., Cincinnati, Ohio.
West Virginia Rail Co., Huntington, W. Va.

TRAMWAYS
A. Leschen & Sons Rope Co., St. Louis, Mo.

TRANSFORMERS
Allis-Chalmers Mfg. Co., Milwaukee, Wis.
General Electric Co., Schenectady, N. Y.
Westinghouse Elec. & Mfg. Co., East Pittsburgh, Pa.

TRANSMISSION ROPE
Williamsport Wire Rope Co., 1301 Peoples Gas Bldg., Chicago, Ill.

TRANSMISSION, SILENT CHAIN
Morse Chain Co., Ithaca, N. Y.

TRAPS
Nicholson & Co., W. H., Wilkes-Barre, Pa.

TRIMMINGS, ENGINE
The Lunkenheimer Co., Cincinnati, Ohio.

TROLLEY FROGS
Central Frog & Switch Co., Johnstown, Pa.
General Electric Co., Schenectady, N. Y.
Ohio Brass Co., Mansfield, Ohio

TROLLEY (Hangers and Clamps)
General Electric Co., Schenectady, N. Y.
Ohio Brass Co., Mansfield, Ohio.

TROLLEY MATERIAL, OVERHEAD
General Electric Co., Schenectady, N. Y.
Ohio Brass Co., Mansfield, Ohio.

TROLLEY WHEELS AND HARPS
General Electric Co., Schenectady, N. Y.
Ohio Brass Co., Mansfield, Ohio.
Westinghouse Elec. & Mfg. Co., East Pittsburgh, Pa.

TROLLEY WIRE
Anaconda Copper Mining Co., Rolling Mills Dept., 111 W. Washington St., Chicago, Ill.

TRUCKS
Lincoln Steel & Forge Co., 5701 Natural Bridge Ave., St. Louis, Mo.

TRUCKS FOR MINE CARS]
J. R. Fleming & Son Co., Inc., Scranton, Penna.

TURBINES, STEAM
Allis-Chambers Mfg. Co., Milwaukee, Wis.
General Electric Co., Schenectady, N. Y.
Westinghouse Elec. & Mfg. Co., East Pittsburgh, Pa.

VALVES
The Lunkenheimer Co., Cincinnati, Ohio
Ohio Brass Co., Mansfield, Ohio.

VULCANIZED FIBRE
Mikesell Bros. Co., 156 N. La Salle St., Chicago, Ill.

WAGON LOADERS
Jeffrey Mfg. Co., 958 N. Fourth St., Columbus, Ohio.

WASHERIES
Roberts & Schaefer Co., McCormick Bldg., Chicago, Ill.

WATER SOFTENING AND PURIFYING APPARATUS
Wm. B. Scaife & Sons Co., Oakmont, Pa.

WEIGHERS
Indiana Laboratories Co., Hammond, Ind.

WELDING APPARATUS, ELECTRIC ARC
General Electric Co., Schenectady, N. Y.
Ohio Brass Co., Mansfield, Ohio.

WHISTLES
The Lunkenheimer Co., Cincinnati, Ohio.

WIRE AND CABLE
Americal Steel & Wire Co., Chicago and New York.
Anaconda Copper Mining Co., Rolling Mills Dept, 111 W. Washington St., Chicago, Ill.
General Electric Co., Schenectady, N. Y.
Roebling Sons, The John A., Trenton, N. J.
Williamsport Wire Rope Co., Gen. Sales Office, 1301 Peoples Gas Bldg., Chicago, Ill.

WIRE ROPE
A. Leschen & Sons Rope Co., St. Louis, Mo.
Williamsport Wire Rope Co., Gen. Sales Office, 1301 Peoples Gas Bldg., Chicago, Ill.

WIRE ROPE FITTINGS
American Steel & Wire Co., Chicago and New York.
Williamsport Wire Rope Co., Gen. Sales Office, 1301 Peoples Gas Bldg., Chicago, Ill.

ZINC ORES
American, Zinc, Lead & Smelting Co., 1012 Pierce Bldg., St. Louis Mo.

Something Different--

That's the Holmes Helical Adjustable Loading Chute. Works equally well with shaker screens or bar screens. Adjustable to any height car, and always at right angles with the car. Note the spacing between the fingers, which allows the fine coal to fall to the bottom of the car. Does a most wonderful job of topping the car.

ROBT. HOLMES & BROS.
INCORPORATED
DANVILLE, ILL.

SURE TO OPEN

CANTON AUTOMATIC MINE DOORS

Safeguard Life—Positive in Operation—Open and Close Quickly—Simple in Construction—Built for Service—Prevent Explosions—Conserve Air.

ONLY 15 SECONDS

interruption to air circulation when a trip of 25 cars travelling 10 miles per hour passes through our door. **PROFIT** by 15 years' experience and install CANTON AUTOMATIC MINE DOORS.

4000 IN USE

Can be Leased or Bought.

Rental price per month saved in a few days. Purchase price saved in a few months.

Write for Catalog

American Mine Door Co.
916 Robin St.
Canton, Ohio

SURE TO CLOSE

BALANCED

"MARCUS" COAL TIPPLES

It is Well to Secure Our Design Before Building

ROBERTS AND SCHAEFER CO.
ENGINEERS AND CONTRACTORS - CHICAGO, U.S.A.

American Mining Congress

OFFICERS AND COMMITTEES, 1922

OFFICERS

W. J. Loring, President
Daniel B. Wentz, First Vice-President
E. L. Doheny, Second Vice-President
Thomas T. Brewster, Third Vice-President
J. F. Callbreath, Secretary

DIVISION STAFF

E. C. Porter, Convention Manager
George H. Bailey, Counse
Harold N. Lawrie, Economist
H. W. Smith, Chief Mineral Tariffs Division
M. W. Kriegh Tax Division
E. H. Pullman, Chief Publicity Department.
Ira L. Smith, Asst. Publicity Department.
E. R. Coombes, Asst. to Secretary.

DIRECTORS

W. J. Loring, San Francisco, Calif.
Bulkeley Wells, Denver, Colo
Daniel B. Wentz, Philadelphia, Pa.
John C. Howard, Salt Lake City, Utah
Thomas T. Brewster, St. Louis. Mo
Carl Scholz, Charleston, W. Va.
H. W. Seaman, Chicago, Ill.
E. L. Doheny, Los Angeles, Calif.
Sidney J. Jennings, New York.
Hugh Shirkie, Terre Haute, Ind.
Robert Linton, New York City
James S. Douglas, Douglas, Ariz

EXECUTIVE COMMITTEE

W. J. Loring — Robert Linton
Sidney J. Jennings, New York.

COMMITTEES

COOPERATION

AMERICAN MINING CONGRESS AND AMERICAN INSTITUTE OE MINING AND METALLURGICAL ENGINEERS

A. M. C.

Henry Mace Payne, Machinery Club, New York City
A. Cressy Morrison, 42nd St. Bldg., New York City
J. E. Spurr, Hill Bldg., New York City
W. R. Ingalls, 115 Broadway, New York City
J. R. Finlay, Room 802, 45 Cedar St., New York City
Daniel B. Wentz, Land Title Bldg., Philadelphia, Pa.

A. I. M. & M. E.

E. P. Mathewson, 42 Broadway, New York City
W. L. Saunders, 11 Broadway, New York City
Walter Douglas, 99 John St., New York City
Benjamin B. Thayer, 42 Broadway, New York City
Edwin Ludlow, 149 Broadway, New York City
Samuel Taylor, Second Nation Bank Bldg., Pittsburgh Pa.

TARIFF

A. H. Jarman, San Francisco, California
Charles W. Potts, Deerwood, Minnesota
B. F. Phillipson, New York City
A. B. Conklin, Clay Graphite Co., Ashland, Ala
A. G. Woodruff, Garrisonville, Va.
Edgar Wallower, Joplin, Missouri
Nelson Franklin, 603 Symes Bldg., Denver, Colo.
Jerome J. Day, Wallace, Idaho
H. P. Baker, New Idria Quicksilver Mining Co., 157 Federal St., Boston, Mass.

ALASKAN AFFAIRS

John A. Davis, Fairbanks, Alaska
Falcon Joslin, 2203 L. C. Smith Bldg., Seattle, Wash.
Bart L. Thane, 408 Crocker Bldg., San Francisco, Calif.

MINING IN FOREIGN COUNTRIES

J. E. Spurr, *Chairman*, Hill Bldg., New York City
Van H. Manning, 15 West 44th St., New York City
E. L. Doheny, Security Bldg., Los Angeles, Calif.
W. J. Loring, Crocker Bldg., San Francisco, Calif.
Matthew C. Fleming, New York City
H. Foster Bain, Bureau of Mines, Washington, D. C.

ADVISORY COMMITTEE UNITED STATES BUREAU OF MINES AND GEOLOGICAL SURVEY

Bulkeley Wells, *Chairman*, Denver, Colo.
Walter Douglas, New York City
Rembrandt Peale, New York City
H. Foster Bain, U. S. Bureau of Mines, Washington D. C.
George Otis Smith, U. S. Geological Survey, Washington, D. C.

DEPARTMENT OF MINES AND MINING

W. J. Loring, *Chairman*, San Francisco, Calif.
Walter Douglas, New York City
Bulkeley Wells, Denver, Colo.
George H. Crosby, Duluth, Minnesota
D .C. Jackling, Hobart Bldg., San Francisco, Calif.
Car Scholz, Charleston, W. Va
S. D. Warriner, Philadelphia, Pa.

COOPERATION (INTERNAL REVENUE DEPARTMENT)

J. F. Callbreath, American Mining Congress, Munsey Bldg., Washington, D. C.
John T. Barnett, 1024 Lafayette St., Denver, Colo.
Paul Armitage, 2174, 233 Broadway, New York City
L. C. Boyle, Kansas City, Mo.
Rush C. Butler, Chicago, Ill.

COAL EXPORTS

Dr. Henry Mace Payne, Machinery Club, New York City
Geo. S. Rice, Bureau of Mines, Washington, D. C.
John C. Callahan, Woodward Bldg., Washington, D. C.
Chas. A. Owen, Pres., Imperial Coal Corporation, 17 Battery Pl., New York City.
G. A. O'Reilly, Irving National Bank, New York City

FEDERAL TAXATION

Paul Armitage, *Chairman*,
233 Broadway, New York, N. Y.
Geo. E. Holmes, *Vice-Chairman*,
15 William St., New York, N. Y.

R. C. Allen, Kirby Building, Cleveland, Ohio.
A. Scott Thompson, Miama, Oklahoma.
Wm. B. Gower, 20 Exchange Place, New York, N. Y.
John C. Howard, Utah Oil Refining Co., Salt Lake City, Utah.
R. V. Norris, 520 Second Nat'l Bank Bldg., Wilkes-Barre, Penn.
J. C. Dick, Dooly Block, Sale Lake City, Utah.
A. P. Ramstedt, Wallace, Idaho.
E. L. Doheny, Security Bldg., Los Angeles, Cal.
Robt. N. Miller, Southern Building, Washington, D. C.

UNIFORM COAL MINE REPORTS

S A. Taylor, Second National Bank Bldg., Pittaburgh, Pa.
Carl Scholz, Virginia Land Bank Bldg., Charleston W. Va.
A. H. Land, Huntington, W. Va.
Morton L. Gould, 701 Terminal Bldg., Indianapolis, Ind.
G. H. Caperton, Box 601, Charleston, W. Va.
Thomas T. Brewster, St. Louis, Mo.

STANDARDIZATION DIVISION

Metal and Coal Branches

COAL MINING BRANCH

General Committee

Colonel Warren R. Roberts, *Chairman*, Chicago, Illinois
E. D. Knight, Cabin Creek Cons. Coal Co., Kayford, W. Va.
C. E. Watts, Efficiency Engineer, Berwind-White Coal Mining Company, Windber, Pa.
A. B. Kiser, Electrical Engineer, Pittsburgh Coal Co Pittsburgh, Pa.
W. J. Montgomery, Manager, Ventilating Dept., Jeffrey Manufacturing Co., Columbus, Ohio.
K. A. Pauly, Power & Mining Engineering Dept., General Electric Co., Schenectady, N. Y.
C. A. Cabell, V. P., Carbon Fuel Company, Kanawha National Bank Bldg., Charleston, W. Va.
Dr. Henry Mace Payne, 300 Madison Ave., New York City.

Underground Transportation

C. E. Watts, *Chairman*

Charles M. Means, Consulting Engineering, Pittsburgh, Pa.
Graham Bright, Westinghouse Electric & Manufacturing Co., E. Pittsburgh, Pa.
Joseph Bryan, General Electric Co., Pittsburgh, Pa.
F. C. Coseo, Jeffrey Manufacturing Co., Columbus, Ohio
D. F. Lepley, General Manager, Connellsville Manufacturing & Supply Co., Connellsville, Pa.
E. A. Watters, General Supt., Hicks' Coal Companies Leechburg, Penna.
J. Milliken, President, Industrial Car Mfgrs. Inst., 68 William St., New York City.
A. H. Ehle, General Sales Manager, Baldwin Locomotive Works, Philadelphia, Pa.
H. K. Porter, Mine Car Department, Hyatt Roller Bearing Co., New York City
Frank S. Barks, President, Lincoln Steel & Forge Co. St. Louis, Mo.
Fred Norman, Chief Engineer, Allegheny River Mining Co., Kittanning, Pa.
T. A. Parker, Manager, Mine Car & Equipment Dept., St. Louis Structural Steel Co., St. Louis, Mo.

Mining and Loading Equipment

C. A. Cabell, *Chairman*

D. J. Carroll, Chicago, Wilmington & Franklin Coal Co., Benton, Ill.
E. N. Zern, Mining Engineer and Editor "Mining Catalog", Pittsburgh, Pa.
Carl Scholz, General Manager, Raleigh-Wyoming Coal Co., Charleston, W. Va.
N. D. Levin, Jeffrey Manufacturing Co., Columbus, Ohio.
J. M. Clark, Clark & Krebs, Charleston, W. Va.
M. Mitchell, Sullivan Machinery Co., St. Louis, Mo.
William Whaley, Myers-Whaley Co., Knoxville, Tenn.
Wm. O. Duntley, Duntley-Dayton Co., Chicago, Ill.
E. S. McKinley, 625 Denham Bldg., Denver, Colo.
Wm. E. Hamilton, 310 Schultz Bldg., Columbus, Ohio
Walter Stevens, Valier Coal Co., Valier, Ill
S. W. Farnham, Mining Engineer, Goodman Mfg. Co., Chicago, Ill.
E. K. Bowers, Morgan-Gardner Electric Co., 68 E. Adams St., Chicago, Ill.
John G. Smyth, Cons. Coal Co., Jenkins, Ky.

Drainage

E. D. Knight, *Chairman*

M. C. Benedict, Consulting Engineer, Johnstown, Pa.
Walter D. Stockley, Fairmont, W. Va.
E. F. Austin, Manager Mine Pump Dept., Dravo-Doyle Co., Pittsburgh, Pa.
Cecil W. Smith, Mining Engr., Nokomis Coal Co., Old Colony Building, Chicago, Ill.
F. W. Smith, Mine Drainage Engr., Weinman Pump & Supply Co., Pittsburgh, Pa.
F. J. Emeny, Chief Engr., The Deming Company, Salem, Ohio.
Professor John W. Hallock, Head of Dept. of Industrial Engineering, University of Pittsburgh, Pittsburgh, Pa.
R. Y. Wert, Mine Drainage Supt., Durham Coal & Iron Co., Soddy, Tennessee.
J. H. Edwards, Electrical Engr., Enkhorn Piney Coal Mining Co., Huntington, W. Va.
L. D. Tracy Mining Engineer U. S. Bureau of Mines, Pittsburgh, Pa.
Walter D. Stockley, 1225 Fulton Building, Pittsburgh, Pa.
M. Spillman, Worthington Pump & Machinery Corp,. Harrison, N. J.
Roscoe N. Woltz, Electrical Engr., Stonega Coal & Coke Co., Big Stone Gap, Va.
Henry E, Cole, Harris Pump & Supply Co., 320 Second Ave., Pittsburgh, Pa.
Chas. H. Matthews, care M. A. Hanna & Co., Cleveland, Ohio.

Ventilation

W. J. Montgomery, *Chairman*

J. M. Doughty, Lehigh & Wilkes Barre Coal Co., Willkes Barre, Penn.
Howard N. Eavenson, Mining Engr., Union Arcade Bldg., Pittsburgh, Pa.
J. C. Gaskill, Consolidation Coal Co, Fairmont, W. Va
Martin J. Lide, Birmingham, Ala.
G. E. Lyman, Gen'l Supt., Madison Coal Corporation, Glen Carbon, Ill.
C. E. Sharpless, Engineer, Ebensburg Coal Co., Ebensburg, Penna.
E. B. Wagner, Lehigh Valley Coal Co., Wilkes Barre, Penna.
H. Bert Wright, Pocahontas Fuel Co., Pocahontas, Va.
E. N. Zern, Mining Engineer and Editor "Mining Catalog" Pittsburgh, Pa.

Outside Coal Handling Equipment

Henry Mace Payne, *Chairman*

G. F. Oxler, G. S. Carnegie Coal Co., Pittsburgh, Pa.
W. A. Bishop, G. S. Pocahontas Cons. Collieries, Pocahontas, Va

PENNSYLVANIA SMELTING CO.
PITTSBURGH, PA.

Manufacturers of

ASSAYERS' C. P. LITHARGE AND TEST LEAD

OFFICE: PITTSBURGH, PA. WORKS: CARNEGIE, PA.

Phelps Dodge Corporation
99 JOHN STREET - - NEW YORK

Copper

"C ★ Q" Electrolytic

"P. D. Co." Casting

Wilmot Engineering Company
Hazleton, Pennsylvania

Manufacturers of

Improved Breaker Machinery for Conveying, Crushing, Sizing and Cleaning Anthracite Coal

Robert W. Hunt Jno. J. Cone
D. W. McNaugher

ROBERT W. HUNT & CO.
Engineers

Bureau of Inspection, Tests and Consultation

2200 Insurance Exchange
Chicago

Mining Engineers and Chemists
Inspection Construction Materials and Machinery at Point of Manufacture

THE WEST VIRGINIA RAIL CO.

Manufacturers

Light Steel Rails and Accessories

8, 12, 16, 20, 25, 30, 35, 40, 45 lbs. per yd.

Mills and General Offices
HUNTINGTON
W. Virginia

Don t **Trust** to blind **Luck.** Use discretion, post unmistakable SIGNS of Danger and Caution.

Create a SAFETY ATMOSPHERE — educate your employee and public in Safety.

Reduce Compensation and Public Liability Premiums and increase efficiency by posting and using

ACCIDENT PREVENTION SIGNS AND TAGS

The Stonehouse Steel Sign Co. Denver

WE-FU-GO AND SCAIFE
WATER
PURIFICATION SYSTEMS
SOFTENING & FILTRATION
FOR BOILER FEED AND
ALL INDUSTRIAL USES
WM. B. SCAIFE & SONS CO. PITTSBURGH, PA.

OFFICERS AND COMMITTEES, 1922—(*Continued*)

F. W. Whiteside, Chief Engineer, Victor American Fuel Co., Denver, Colo.
Jas. Needham, General Manager, St. Paul Coal Co., Chicago, Ill.
F. G. Morris, G. S. Coal Mines, Republic Iron & Stee Co., Sayreton, Ala.
M. A. Kendall, Chief Engineer, Stephens-Adamson Mfg. Co., Aurora, Illinois.
Warren R. Roberts Wrigley Building Chicago, Ill.
Rudolph H. Kudlich Asst. to Chief Mechanical Engr. U. S. Bureau of Mines, Washington, D. C.
Hubb Bell, 316 Hudson St., New York City.

Underground Power Transmission

A. B. Kiser, *Chairman*

Harry M. Warren, Electrical Engineer, D. L. & W. R. R., Scranton, Pa.
W. A. Chandler, care of Hudson Coal Co., Scranton, Pa.
R. L. Kingsland, General Superintendent, P. & M. Dept., Cons. Coal Co., Fairmont, W. Va.
Carl Lee, Electrical Engineer, Peabody Coal Co., McCormick Bl., Chicago, Ill.
L. C. Ilsley, 4800 Forbes St., Pittsburgh, Pa. (Bureau of Mines.)

Power Equipment

K. A. Pauly, *Chairman*

D. C. McKeeham, Box 913, Union Pacific Coal Co., Rock Springs, Wyo.
G. S. Thompson, Colorado Fuel & Iron Co., Pueblo, Colo.
H. F. Randolph, Cons. Engr, 2330 Oliver Bldg., Pittsburgh, Pa.
M. D. Kirk, Pittsburgh Terminal R. R. Coal Co., Wabash Bl., Pittsburgh, Pa.
R. W. E. Moore, Westinghouse Electric & Manufacturing Co., E. Pittsburgh, Pa.
R. L. Kingsland, Consolidated Coal Co., Fairmont, W. Va.
W. C. Shunk, Stonega Coal & Coke Co., Big Stone Gap, Va.
J. T. Jennings, Philadelphia & Reading Coal & Iron Co., Pottsville, Pa.
W. C. Adams, with Allen & Garcia, Chicago, Ill.
O. P. Hood, Chief Mechanical Engineer, Bureau of Mines. Washington, D. C.
Graham Bright, Westinghouse Electric & Manufacturing Co., Pittsburgh, Pa.
A. J. Nicht, Allis Chalmers Co., Milwaukee, Wis.
Stephen H. Green, Pacific Coast Coal Co., Seattle, Wash.
Charles Legrand, Phelps Dodge Corp., Douglas, Ariz.
Martin J. Lide, Cons. Engr., Birmingham, Ala.
C. D. Woodward, Chief Electrical Engineer Anaconda Copper Mining Co., Butte, Mont.

Mine Timbers

(*In process of organization.*)

Welfare

(*In process of organization.*)

Advisory Committee on Safety Codes

S. W. Farnham, Goodman Manufacturing Co., Chicago, Ill.—Representing Mining & Loading Equipment.
T. A. Parker, St. Louis Structural Steel Company, St. Louis, Mo.—Representing Underground Transportation.
L. D. Tracy, U. S. Bureau of Mines, Pittsburgh, Pa.—Representing Mine Drainage.
Martin J. Lide, Consulting Engineer, Birmingham, Ala—Representing Power Equipment.
A. B. Kiser, Pittsburgh Coal Co., Pittsburgh, Pa.—Representing Underground Power Transmission.
G. F Oxler, Carnegie Coal Co., Pittsburgh, Pa.—Representing Outside Coal Handling Equipment.

METAL MINING BRANCH

General Committee

Charles A. Mitke, Bisbee, Ariz., *Chairman*

N. B. Braly, General Manager, North Butte Mining Co., 14 W. Granite St., Butte, Montana.
William B. Daly, Asst. General Manager, Anaconda Copper Company, Butte, Mont.
William Conibear, Inspector, Dept. of Safety, Cleveland-Cliffs Iron Co., Ishpeming, Mich.
H. C. Goodrich, 1408 Deseret Bank Bldg., Salt Lake City, Utah
Gerald Sherman, Phelps Dodge Corp. Douglas, Ariz.
Lucien Eaton, Superintendent, Ishpeming District, Cleveland-Cliffs Iron Company, Ishpeming, Mich.
T. O. McGrath, Shattuck Arizona Mining Co., Bisbee, Arizona.
Chas. F. Willis, Editor, Arizona Mng. Journal, Phoenix, Ariz.

Welfare Work

Chas. F. Willis, *Chairman.*

E. F. Irwin, Homestake Mng. Co., Lead, S. D.
Stanley L. Arnot, Plymouth Cons. Gold Mines, Plymouth, Calif.
H. C. Henrie, Phelps Dodge Corpn., Bisbee, Ariz.
Geo. A. Stahl, 603 Symes Bldg., Denver, Colo.
John L. Boardman, Butte, Mont.

Mine Drainage

(*In process of organization.*)

Drilling Machines and Drill Steel

N. B. Braly. *Chairman*

Arthur B. Foote, North Star Mines, Grass Valley, Calif.
Arthur Notman, Superintendent, Mine Dept., Copper Queen Br., Phelps Dodge Corpn., Bisbee, Ariz.
O. J. Egleston, Manager, U. S. Smelting, Refining & Mining Co., Kennett, Calif.
C. S. Elayer, General Foreman, Arizona Commercial Mining Co., Globe, Ariz.
J. A. Fulton, Idaho-Maryland Mines Co., Grass Valley, Calif.
L. C. Bayles, Chief Engineer, Ingersoll-Rand Co., Phillipsburg, N. J.
H. Seamon, Efficiency Engineer, United Verde Copper Co., Jerome, Ariz.
Ocha Potter, Superintendent, Superior Division, Calumet and Hecla Mining Co., Houghton, Mich.
R. T. Murrill, Inspiration Cons. Copper Co., Inspiration, Ariz.
George H. Gilman, 125 Prescott St., East Boston, Mass
Charles Lees, Superintendent, Iron Cap Copper Co., Copper Hill, Ariz.
Charles A. Smith, Mine Superintendent, Ray Cons. Copper Co., Ray, Ariz.
Roy Marks, Stope Engineer, Box 1676, United Verde Exten. Mining Co., Jerome, Ariz.
Earl Hastings, Foreman, Clay Mine, Arizona Copper Co., Ltd., Morenci, Arizona.
Frank Ayer, Mine Superintendent, Moctezuma Copper Co., Pilares De Nacozari, Sonora, Mexico.
W. G. Scott, Superintendent, Coronado Mines, Arizona Copper Co., Ltd., Metcalf, Ariz.
Charles Officer, Sullivan Machinery Co., Chicago, Ill.
A. S. Uhler, Ingersoll-Rand Co., New York City.
George A. Shaw, Efficiency Engineer, Denver Rock Drill Manufacturing Co., Denver, Colo.
H. T. Walsh, V. P., Sullivan Machinery Co., Chicago, Ill.
R. A. Scott, S. M. Denver Rock Drill Mfg. Co., Denver, Colo.
Bruce Yates, Homestake Mining Co., Lead, S. D.
T. C. Baker, Asst. Gen'l Mgr., The Mexican Corpn., Edificio LaMutua, Mexico City, Mexico.

Inner Committee
Drilling Machines and Drill Steel

Frank Ayer, Superintendent, Moctezuma, Copper Co., Nacozari, Sonora, Mexico.
H. Seamon, Drill Efficiency Engineer, United Verde Copper Co., Jerome, Ariz.
Charles A. Smith, Superintendent, Ray Cons. Copper Co., Ray, Ariz.
Arthur Notman, Superintendent, Copper Queen Br., Phelps Dodge Corp., Bisbee, Ariz.
George Gilman, 125 Prescott St., E. Boston, Mass.
H. T. Walsh, Vice-President, Sullivan Machinery Co., Chicago, Ill.
George A. Shaw, Efficiency Engineer, Denver Rock Drill Manufacturing Co., Denver, Colo.
L. C. Bayles, Chief Engineer, Ingersoll-Rand Co., Phillipsburg, N. J.

Underground Transportation

William B. Daly, *Chairman*

George H. Booth, Mechanical Engineer, Inspiration Cons. Copper Co., Inspiration, Ariz.
Andover Syverson, Chief Engineer, United Verde Exten. Mining Co., Jerome, Ariz.
E. M. Morris, Asst. Supt. of Mines, Anaconda Copper Mining Co., Butte, Montana.
R. R. Boyd, Asst. Superintendent, Mine Dept., Copper Branch, Phelps Dodge Corp., Bisbee, Ariz.
T. K. Scott, Chief Engineer, Box 100, Miami Copper Co., Miami, Ariz.
H. T. Hamilton, Manager, Moctezuma Copper Co., Nacozari, Son., Mexico.
R. E. Howe, Asst. General Manager, Cananea Cons. Copper Co., Cananea, Sonora, Mexico.
D. S. Calland, Managing Director, Companie de Real del Monte de Pachuca, Pachuca, Hidalgo, Mexico.
Robt. H. Dickson, Chief Engineer, Calumet & Arizona Mining Co., Warren, Arizona.
Stanly A. Easton, Kellogg, Idaho.
John Kiddie, Arizona Copper Co., Morenci, Ariz.
Ole Hallingby, Lascelle Mine, Calumet & Hecla Mng. Co., Calumet, Mich.

Fire Fighting Equipment

William Conibear, *Chairman*

J. T. Young, Safety Inspector, Arizona Copper Company, Morenci, Ariz.
Orr Woodburn, Safety First Director, Globe-Miami District, Globe, Ariz.
A. A. Krogdahl, Safety Engineer, Oliver Iron Mining Co., Virginia, Minn.
Guy J. Johnson, Safety Engineer, Homestake Mining Company, Lead, S. Dak.
H. J. Rahilly, Superintendent, Mine Fire & Hydraulic Filling Dept., Anaconda Copper Mining Company, Butte, Mont.

Steam Shovel Equipment

H. C. Goodrich, *Chairman*

Robert E. Tally, General Superintendent, United Verde Copper Company, Clarkdale, Ariz.
G. W. Barnhart, Manager, San Francisco Branch, Marion Steam Shovel Co., San Francisco, Calif.
C. B. Lakenan, General Manager, Nevada Cons. Copper Co., McGill, Nev.
H. G. S. Anderson, Mining & Metallurgical Engineer, Hurley, N. Mex.
T. A. Snyder, Bucyrus Co., Milwaukee, Wis.
Geo. Mieyr, Phelps Dodge Corpn., Bisbee, Ariz.
M. Curley, Gen'l Supt., New Cornelia Copper Co., Ajo, Arizona.

Mine Ventilation

Charles A. Mitke, *Chairman* (Temporary)

A. C. Stoddard, Chief Engineer, Inspiration Cons. Copper Co., Box 15, Inspiration, Ariz.
D. Harrington, care Bureau of Mines, Denver, Colo.
Norman G. Hardy, Chief Mechanical Engineer, Smelter Dept., Arizona Copper Co., Clifton, Ariz.
W. A. Rowe, Chief Engineer, American Blower Co., Detroit, Mich.
E. B. Williams, Manager, Mine Fan Dept., B. F. Sturtevant Company, Hyde Park, Boston, Mass.
Robert N. Bell, State Mine Inspector, Boise, Idaho.
F. L. Stone, care General Electric Co., Schenectady, N. Y.
C. E. Legrand, Consulting Engineer, Phelps Dodge Corp., Douglas, Ariz.
O. K. Dyer, Buffalo Forge Company, Buffalo, N. Y.
Don M. Rait, Asst. Superintendent of Mines, Calumet and Arizona Mining Co., Warren, Ariz.
A. S. Richardson, Chief of Ventilating Department, Anaconda Copper Mining Co., Drawer 1375, Butte, Mont.
Walter C. Browning, Magma Copper, Superior, Ariz.

Mechanical Loading Underground

Lucien Eaton, *Chairman*

H. E. Billington, Manager of Sales, The Thew Shovel Co., Lorain, Ohio.
J. H. Hensley, Mine Superintendent, Miami Copper Company, Miami, Ariz.
Albin F. Victor, Manager of Sales, Lake Superior Loader Co., Duluth, Minn.
H. DeWitt Smith, Superintendent of Mines, United Verde Copper Co., Jerome, Ariz.
William Whaley, General Manager, Myers Whaley Co., Knoxville, Tenn.
R. W. Macfarlane, Mining Dept., Longfellow Div., Arizona Copper Co., Morenci, Ariz.
E. E. Whitely, Calumet & Ariz. Mng. Co., Warren, Ariz.

Mine Timbers

Gerald Sherman, *Chairman*

W. G. McBride, General Manager, Old Dominion Co., Globe, Ariz.
Ira B. Joralemon, Asst. General Manager, Calumet & Arizona Mining Co., Warren, Ariz.
Felix McDonald, Mines Superintendent, Inspiration Cons. Copper Co., Inspiration, Ariz.
John Kiddie, Division Superintendent, Arizona Copper Company, Morenci, Ariz.
W. S. Boyd, Manager Ray Cons. Copper Co., Ray, Ariz.
T. Evans, General Supt., Cananea Cons. Copper Co., Cananea, Sonora, Mexico.
G. W. Nicholson, General Supt., United Verde Exten. Mining Co., Jerome, Ariz.
C. L. Berrien, Anaconda Copper Co., Butte, Mont.
George M. Hunt, Forest Products Laboratory, Madison, Wisconsin.

Mine Accounting

T. O. McGrath, *Chairman*

L. S. Cates, General Mgr., Utah Copper Co., Salt Lake City, Utah.
J. C. Dick, Salt Lake City, Utah.
H. H. Miller, General Auditor, Herculese Mining Co., Wallace, Idaho.
H. L. Norton, Phelps Corporation, Douglas, Arizona.
Harry Vivian, Chief Engineer Calumet and Hecla Mining Co., Calumet, Michigan.
L. K. Diffenderfer, Treasurer, Vanadium Corp., 120 Broadway, New York City.

Joint Committee on Coordination

Charles A. Mitke, *Chairman.*

Representing Coal Mining Branch:

C. E. Watts, Windber, Pa.
E. D. Knight, Kayford, W. Va.
K. A. Pauly, Schenectady, N. Y.

Representing Metal Mining Branch:

Arthur Notman, Bisbee, Ariz.
William B. Daly, Butte, Mont.
Charles A. Mitke, Bisbee, Arizona.

Joint Publicity Committee

Representing Coal Mining Branch:

Ralph Becker, Evanston, Ill.
C. H. Trik, Jeffrey Mfg. Co., Columbus, Ohio.

Representing Metal Mining Branch:

Chas. F. Willis, Phoenix, Ariz.
T. O. McGrath, Bisbee, Ariz.

NEW YORK
No. 1870 Hudson Terminal Building
Courtland 3354

CLEVELAND
E. 38th Street and Lakeside Ave.
Prospect 1776

DETROIT
3-140 General Motors Building
Market 5627

WHOLESALE COAL COMPANY

General Offices:

Chamber of Commerce Building, Pittsburgh

Bell Phones: Grant 6920-2-3-4

P. & A. Phone: Main 1390

CORRY, PA.
145 N. Center St.
Phone 262-M

COVINGTON, KY.
Lawyers Building
South 6692

SMITH FALLS, ONTARIO
No. 44 Main Street
Phone 107

STONEGA COKE AND COAL COMPANY

INC.

MINERS AND SHIPPERS OF THE CELEBRATED

Stonega and Roda Coal

OFFICES

LAND TITLE BUILDING, PHILADELPHIA

25 BROADWAY, NEW YORK

BIG STONE GAP, VIRGINIA
CHARLESTON, SOUTH CAROLINA
SPARTANBURG, SOUTH CAROLINA
NORFOLK, VIRGINIA

SHIPPING PIERS AT

CHARLESTON, S. C. and NORFOLK, VA.

BUNKERING AGENTS—WM. JOHNSON & CO., CHARLESTON, S. C.

Cable Address—"STONEGA"

NEW YORK BUNKERING AGENTS FOR CHARLESTON, S. C., and SAVANNAH, GA.

PENNSYLVANIA COAL & COKE CORPORATION, .. 17 Battery Place, New York City, N. Y.

EUROPEAN BUNKERING AGENTS

Hull, Blyth & Co., Ltd., Lloyd's Ave., London, Eng.

Sold by

CLINCHFIELD FUEL COMPANY, Spartanburg, S. C.

"Clinchfield"

Mined by

CLINCHFIELD COAL CORPORATION, Dante, Va.

THORNE, NEALE & COMPANY., Inc.

FRANKLIN BANK BUILDING
1416 CHESTNUT STREET—9 A. M. to 4 P. M.
PHILADELPHIA, PA.

MINERS' AGENTS AND WHOLESALE DEALERS

Anthracite ***COAL*** ***Bituminous***

ANTHRACITE COLLIERIES

Mt. Lookout	Harry E	Forty Fort	New Castle	Locust Run (Washery)
Sterrick Creek	Northwest	Lackawanna	Buck Run	

Pardee Bros. & Co.—Lattimer Lehigh

BITUMINOUS

Sonman, South Fork District—Low volatile, low ash, low sulphur

Smithing—1 1-4 in. screened

Fairmont — Quemahoning — Indiana County

NEW YORK OFFICE: 17 BATTERY PLACE

Branch Offices: **Baltimore Buffalo Chicago Scranton, Pa. Mauch Chunk, Pa.**

THE LEHIGH COAL AND NAVIGATION COMPANY

Miners and Shippers

For Over a Century

1820 **ANTHRACITE** **1922**

"The Best Since 1820"

437 CHESTNUT STREET - PHILADELPHIA, PENNSYLVANIA

THE IRONTON

STORAGE BATTERY LOCOMOTIVE

Hundreds of users have found it dependable and efficient, Gathering and entry haulage costs reduced 15 per cent to 50 per cent

THE IRONTON ENGINE COMPANY, Main Office and Factory, Ironton, Ohio

HUNTINGTON, W. VA. Robson-Prichard Bldg. PHILADELPHIA Fidelity Mutual Bldg. CHICAGO Caxton Bldg., 508 S. Dearborn St. DENVER Gas & Electric Bldg. LEXINGTON, KY. Fayette Nat. Bk. Bldg. PITTSBURGH 534 Union Arcade Bldg. SEATTLE 808 Post St

Canadian Representative: Powley & Townsley, Ltd., Excelsior Life Bldg., Toronto

Orvis C. Hoffman Leon H. Hoffman

DIAMOND CORE DRILLING

—CONTRACTORS—

HOFFMAN BROS.

PUNXSUTAWNEY, PA.

(Our Specialty—Testing Bituminous Coal Lands)

Up-To-Date Equipments. Expert Drill Runners. Inquiries Solicited

JOHN BOYLE, JR.

Attorney-at-Law

Patents

B. S. in Mining Engineering and Metallurgy
16 years in the examining corps of the
U. S. Patent Office

OURAY BLDG., WASHINGTON, D. C.

ROTARY CAR-DUMPERS FOR MINE CARS (GRAVITY, ELECTRICAL OR PNEUMATIC DRIVE) — "SOLIDCAR" SELF-DUMPING CAGES CAR CONTROL AND CAGING EQUIPMENT

CHICAGO ILL.

CAR-DUMPER & EQUIPMENT CO.

PITTSBURGH PA.

THE MECHANICAL SPRAGGER AUTOMATIC TRIP CONTROL EQUIPMENT

ROTARY CAR-DUMPERS FOR STANDARD GAUGE RAILROAD CARS

SCREENS OF ALL KINDS

Chicago Perforating Co.
2443 West 24th Place
Tel. Canal 1480 CHICAGO, ILL.

UNION ASSAY OFFICE, Inc.

Assayers and Chemists

Box 1446 Salt Lake City

W. H. NICHOLSON & CO.

Manufacturers of

Wyoming Automatic Eliminators,
Steam Traps and Steam Separators,
particularly adapted for mine service.

Wilkes-Barre, Penna.

The Indiana Laboratories Co.

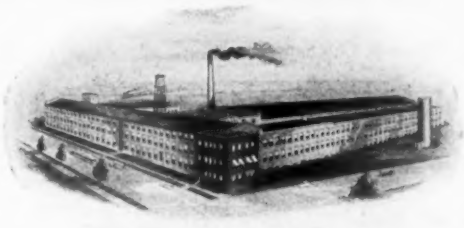
Incorporated

Chemists, Assayers, Engineers, Shippers'

Representatives

Hammond, Ind.

H. F. RANDOLPH
ELECTRICAL MINING ENGINEER
PITTSBURGH, PA.



The only complete Asbestos Textile Mill and Brattice Cloth plant in the West

MIKESELL BROTHERS COMPANY

Manufacturers of

ASBESTOS PRODUCTS

BRATTICE CLOTH, PIPE COVERINGS,
MICA AND ELECTRICAL INSULATION

Asbestos and Rubber Packings, Gaskets, Cloth, Tape, Yarns, Tubing and Cord, Brake Linings, Clutch Facings and Brake Blocks

Catalog B Now Ready for Distribution

MAIN OFFICE
156 No. LA SALLE ST., CHICAGO, ILL.

PLANT AND WORKS
WABASH, INDIANA

INDEX TO ADVERTISERS

Allis Chalmers Mfg. Company 14

Ameling Prospecting Company, H. R. 25

American Cyanamid Company 4

American Mine Door Company 27

American Steel & Wire Company 8

American Zinc Lead & Smelting Company 16

Anaconda Copper Mining Company 14

Atlas Powder Company 15

Boyle, Jr., John 33

Car Dumper & Equipment Company 33

Central Frog & Switch Company 25

Chicago Perforating Company 33

Clinchfield Coal Corporation 31

Connellsville Mfg. & Mine Supply Company 25

Denver Rock Drill Mfg. Company 3

Du Pont de Nemours & Company, E. I. 10–11

Fleming & Sons Company, J. R. 21

Goodman Mfg. Company 7

Hercules Powder Company 18–23

Hockensmith Wheel & Mine Car Company 23

Hoffman Brothers 33

Holmes & Brothers, Robert 27

Hunt & Company, Robert W. 29

Indiana Laboratories Company 33

Ingersoll-Rand Company 12

Ironton Engine Company 33

Irvington Smelting & Refining Works 25

Jeffrey Manufacturing Company, The ..... Cover

Lehigh Coal & Navigation Company 32

Leschen & Sons Rope Company, A. 13

Lidgerwood Manufacturing Company 8

Linde Air Products Company 19

Lunkenheimer Company, The 25

Mikesell Brothers Company 33

Morse Chain Company 9

New York Engineering Company 21

Nicholson & Company, W. H. 33

Ohio Brass Company 21

Pennsylvania Smelting Company 29

Phelps Dodge Corporation 29

Randolph, H. F. 33

Roberts & Schaefer Company 27

Roebling's Sons Company, John A. 25

Roessler & Hasslacher Chemical Company 6

Scaife & Sons Company, William B. 29

Standard Oil Company 12

Stonega Coke & Coal Company 31

Stonehouse Steel Sign Company 29

Streeter Amet Weighing & Recording Company 23

Thorne, Neale & Company 32

Union Assay Office 33

United Metals Selling Company 16

Vulcan Iron Works 17

West Virginia Rail Company 29

Wholesale Coal Company 31

Wilmot Engineering Company 29

The American Mining Congress

Specialized Service

The DIVISION OF TAXATION

The DIVISION OF MINERAL TARIFFS

The DIVISION OF PRECIOUS AND RARE MINERALS

The BUREAU OF MINING ECONOMICS

The DAILY INFORMATION SERVICE

The STANDARDIZATION DIVISION

The MINING CONGRESS JOURNAL

Consult Us

MUNSEY BUILDING **WASHINGTON, D. C.**

The Height of Coal Vein Is No Obstacle to the Use of the Jeffrey 38-A Pit Car Loader

Conveyer shown on top of car close to roof, loading in very low coal

Jeffrey 38-A Pit Car Loader going into low place

By looking closely at the top illustration, the conveyer loading end of the Jeffrey Pit Car Loader can be seen above the car close to the roof.

It is the only machine which will load coal in a low vein.

It can be used to advantage in room and pillar work as it is light, self-propelling and easy to move from place to place.

The 38-A Loader can be made for various heights. In making inquiry, be sure to give gauge of track and voltage. Height of ties and rails, height and length of coal car, space between top of car and roof.

Send for Catalog No. 336-E if you do not have a copy.

THE JEFFREY MFG. CO.
958-99 NORTH FOURTH STREET, COLUMBUS, OHIO

JEFFREY
MINING EQUIPMENT

Where the 38-A Loader is used in wide places, coal is pulled onto conveyer by means of a scoop operated by a manila rope

RANSDELL INCORPORATED, PRINTERS, WASHINGTON, D. C.